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# Modern Practice in Galvanizing Sheets

## Methods of Constructing and Operating Galvanizing Pots—Preparation of Material and Costs—Some Hitherto Unpublished Facts

BY CLEMENT F. POPPLETON

GALVANIZING, especially as applied to sheets, together with chapters on galvanizing machines and the care and setting of galvanizing kettles or pots is the subject of this article.

The method of galvanizing ordinary commercial sheets was dealt with in the author's article on the manufacture of sheets, THE IRON AGE, March 21, 1918, pages 740 and 741.

Presuming that the sheets are delivered to the pickling department properly annealed, the process is to pickle in a solution of sulphuric acid and water, 10 to 15 per cent acid substantially as described in the article above named. There are many methods of pickling. The old hand method required two long and narrow tanks with a depth of about 6 to 8 in. greater than the widest sheet to be treated. These tanks in England and Wales were usually constructed of stone slabs 4 in. thick rebated at the joints and made acid and water tight with sulphur. The sheets were dropped in to the tanks on edge in batches of about 1 ton. The picklers, two to a tank, stood on a platform and pushed the sheets backward and forward by means of long steel rods having chisel points. To divide the sheets so as to allow the acid solution to reach all portions of the sheet the rods were inserted in different strata of the pack and the right-hand pickler usually had his rod about 15 sheets in front of the left-hand pickler. To ascertain if the process had been carried far enough, one or two sheets from different parts of the pack were lifted out and examined. This method required a considerable amount of skill and experience, was at the best uncertain and was particularly unhealthy for the workmen. It is now, happily, practically obsolete.

There are several methods of mechanically pickling sheets more or less commercially successful and all a very distinct advance on the hand method. In all of these the sheets are packed on edge in acid proof crates, which have vertical pins at intervals in the width to prevent the mass of sheets too closely adhering together. A crate load is about 2 tons in the plunger oscillator type machines and 1 to 1½ tons in the Mesta machine.

The broad principles are: 1—the oscillator plunger type. In these machines the acid is agitated around and between the sheets which remain quiescent. 2—The Mesta type in which the sheets are plunged up and down in the acid.

The tanks for all types are usually made of pitch or yellow pine. For the oscillator or plunger type the tanks are made long enough to accommodate the longest sheets to be pickled plus about 1 ft. clearance and are about 5 ft. wide. If the plunger is actuated on the side a separate partition is arranged between the sheets and the plunger, but the partition does not extend the whole depth of the tank. The plunger in this type is formed of pine about 12 in. thick and 4 ft. deep with about 26-in. stroke. The end type of plunger is exactly similar but is less in size, being placed at the end of the tank crosswise. Of these two the side plunger gives the better results. An exactly similar tank, with plunger, is necessary in both cases for rinsing the acid off the sheets after they are sufficiently pickled.

The Mesta type consists of a steam cylinder carrying four horizontal arms from which are suspended the acid proof crates. There are three tanks placed at right angles to each other on three of the four quadrants of a circle. The size of the tanks is regulated, as in the plunger type, by the maxi-

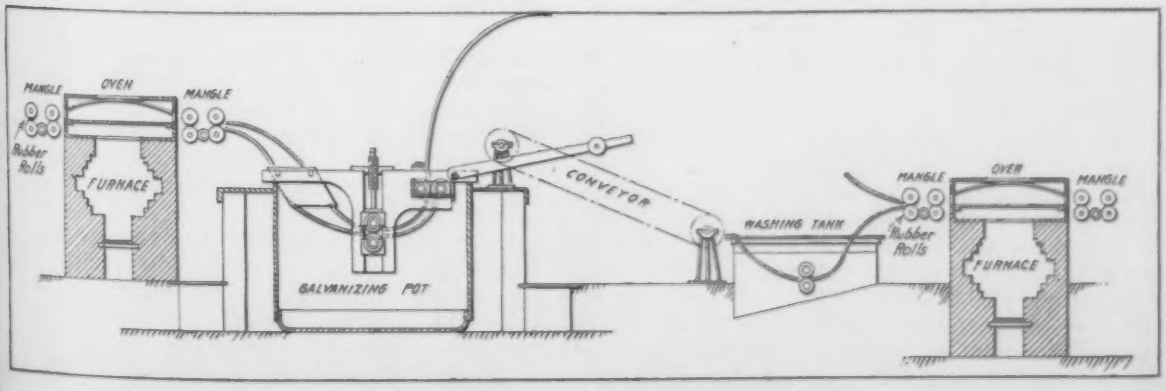



Fig. 1—Scheme of a Sheet Galvanizing Plant

mum length of sheet it is proposed to handle. Two of these tanks contain acid solutions and the third water. It is possible to utilize the waste strong solution to provide the strength for the second or weak acid bath, as of necessity a certain amount of the strong solution adheres to the sheets and crates. This machine enables the use of two pickling baths, a very desirable feature, without extra labor or floor space, and the rinse water is not charged with acid as rapidly as is the case with the single pickle tank of the plunger system. Further steam is requisite to heat up the acid solution and the exhaust steam from the Mesta machine can be used for this purpose.

After pickling, the sheets are subjected to a rigid inspection, as faults, in this process, will inevitably show up after coating in the galvanizing bath, and it is obvious that after coating the loss of the much more valuable metal spelter plus the labor expended is to be avoided if by any means possible, it being borne in mind that a galvanized waster has less actual value as scrap than a black waster.

After inspection the sheets are placed in a storage tank and kept covered with water. It is very important that the acid soaked sheets should be exposed to the air for the shortest possible time as oxidation takes place very rapidly on the pickled surface. The finished work will be very much improved by allowing the sheets to remain in the storage tank for at least 72 hr.; in fact, a week is not too long. Overpickled sheets, which always produce "gray" galvanized sheets (that is, small, almost imperceptible spangles), may be "brought back" to a certain extent by a long immersion in water.

From the storage tank the sheets are taken about 20 or 30 at a time into a solution tank, which, as its name implies, contains a weak solution of acid and water (about ½ per cent to 1 per cent hydrochloric acid is usually used in this country and in Great Britain, and from this tank are immediately dipped. Dipping or coating still retains its old name albeit today the sheets are coated by machinery.

### The Old System of Dipping

The old dipping pot, which the author well remembers, consisted of a wrought iron tank about 13 ft. long, 3 ft. wide and 5 ft. deep. It was divided in the center by means of a plate about 2 ft. deep by ⅜ in. thick. This had an angle riveted along its edge, which angle rested on the end plates of the pot. There were two dippers, who were provided with a long hook and a short two-pronged fork. The sheets were placed edge down in the hook and pushed down into the spelter by means of the fork. After they had remained in the bath long enough, in the judgment of the head dipper, to become of the same temperature as the bath, the top edge of the sheet was pushed over by means of the fork under the dividing plate and then by means of the hooks the sheet was raised above the surface of the metal on the exit side.

There were two catchers who were provided with a pair of tongs exactly similar to the modern ice tongs except that the grips were buttons, round-headed rivets usually. To one handle of these tongs was attached a rope which ran over a sheave, which was usually about 15 ft. up in the air. The sheet was pulled up and allowed to remain in the air until it had "spangled." Then it was allowed to drop into a water bath, the function of which was to wash off flux stains. Thence it was taken out by two boys and thrown into a shallow box filled with sawdust. Here it was thoroughly scrubbed by hand on both sides, usually by female labor, passed on to an inspection table, brushed off and branded and thence taken to the packers.

The system, as adopted at the works of John Lysaght, Ltd., Bristol, England, was to dip through flux and take out through flux. At several of its competitors' works, the exit side of the pot was covered with sand or coke dust to save spelter, but the sheets were lacking in appearance and spangle.

It took a crew of two dippers, two catchers, two wash boys, two sawdust scrub girls, one inspector, one brander and two truckers, or 12 men, boys and girls to each pot, and the average output was 4½ tons in 10½ hr. This process the author last saw in commercial use in the fall of 1889 at which time he was designing and experimenting with what proved to be the first commercially successful four roll galvanizing machine.

### Flux and Dry Dipping

The modern method of "dry" dipping or galvanizing was described in the author's article previously referred to. Dry dipping is a term used in Great Britain to differentiate the product from flux dipping. This latter process is very little used in the United States, but is preferred by many markets and the English Government specifications call for it. The markets that require flux-dipped sheets for better quality work, both corrugated and flat, are Australia, Canada, Cape Markets and Argentina. The best known brands of flux-dipped sheets are Orb (John Lysaght, Ltd.), Redcliffe Crown and Queen's Head, the last mostly flat sheets used in Canada. A description of this process is given below, together with a relative cost sheet.

The pickling of the sheet and in general the preparation of the black sheet is precisely the same for flux dipped as for dry dipped, except that as the flux-dipped sheet is more often used flat and for working up greater care should be taken in annealing. The "Queen's Head" guarantee is that the sheet shall seam and wire both ways of the grain without sign of fracture of either sheet or coating.

It is much better for all sheets to be well water soaked after pickling, but for flux dipping it is essential, as large uniform spangles are demanded in this product. The sheets for flux dipping must remain in the water storage tank at least 72 hr. and preferably a week. However, great care must be taken that the sheets are entirely covered with water. A little should be run off daily and the tank filled up with fresh water.

Dipping may be done either wet or dry; that is, the sheet may be passed into the entering flux box from the solution tank either direct, that is, wet, or may be passed over an oven and be dried, entering the flux at about the same temperature as the flux itself. This latter method is preferred at the Lysaght plant, but is not universally adopted even in England and Wales. It is more economical in muriate of ammonia and also safer to operate, lessening the liability to "blow." It is, however, preferable to heat the sheets, as it assists in dispersing the hydrogen gas evolved in the pickling process, which is one cause of gray or small spangled sheets.

The galvanizing machine is exactly the same for both processes and consists of a frame or housing and either four or six rolls. Two, in a four-roll pot, are entirely submerged and two partially submerged in the metal. In dry dipping to get the best results the metal line should be 1/16 to ¼ in. below the horizontal center line of the surface or partially submerged rolls.

In flux dipping the metal line should be as follows:

| | |
|---|---|
| For No. 27 gage | 3/8 in. higher than the horizontal center of the surface rolls. |
| For No. 24 gage | 1/2 in. higher than the horizontal center of the surface rolls. |
| For No. 20 gage and heavier | 5/8 in. higher than the horizontal center of the surface rolls. |

The flux finish is obtained by passing the sheet through an exit flux which is proportioned as follows:

| | |
|---|---|
| Muriate of ammonia | 4 lb. |
| Crude glycerine | 2 oz. |
| Tallow | 2 oz. |

This quantity is sufficient for one ton (2240 lb.) of No. 26 gage sheets; this figure is the actual result of a test covering 3000 tons of 84 in. x 30 in. x 26 gage.

This mixture is preferably made up for say 4 hr. work by the storekeeper and handed out to the dipper in a convenient box. It is applied to the exit rolls by hand, a little at a time, that is, sprinkled on. The dipper must at all times be careful to keep his flux box clean and the flux foamy, dipping out into the pot such flux as becomes dead. This flux box is made of 1/4-in. plate with one seam and is cut out to tightly fit the roll necks (not bearing on them); it should be 8 in. high above the metal line when 8-in. rolls are used.

The turnover is used to compel the sheet to follow the conveyor, but is arranged to allow sufficient vertical travel to give the spelter time to spangle. As there is considerable list in flux galvanizing the "kick off" is provided. This is made of 2 x 2 x 1/4-in. angles and makes the sheet jump back in against the turnover, which gives sufficient jar to shake off all the list. The conveyor consists of five lines of No. 42 Ewart chain. It is 9 ft. center to center of sprockets, which is sufficient to set all sheets up to and including No. 20 gage. This length can be used for No. 18 gage, but is not recommended, and cannot be used for anything heavier. Eleven feet is preferable for No. 18 gage and 15 ft. for No. 16 gage or heavier.

The washing tank has a sloped bottom allowing all sludge, killed flux and other foreign matter to settle well out of the way of the travel of the sheet. It is arranged with a 2-in. wash out plug, a 3/4-in. inlet pipe and 3/4-in. overflow and a 3/4-in. steam pipe to heat the water when starting up and after washing out, which should be done every three turns. The guides through this washing tank are made of 3 x 1/4-in. flat bars spaced on about 8-in. centers.

All rolls except the galvanizing rolls are 6 in. in diameter of barrel with 2 1/2-in. necks. The most economical rolls in a galvanizing machine are 8 in. with 3 1/2-in. necks bushed to 5 in.

After leaving the washing tanks the sheets are passed through guides, also of 3 x 1/4-in. flat bars, into a mangle, which has two pairs of 6-in. rolls, one pair rubber coated and one pair cast iron with ground finish.

From this mangle the sheets pass through an oven. This consists of a cast-iron box with fire bars forming the bottom guide for the sheets and curved flat 2 x 1/2-in. bars forming the top guides. The furnace (usually coke fired) is arranged with its fire bars about 4 ft. below the fire bars in the oven.

The sheets next pass through a second mangle which is precisely the same as the first, but there are no rubber coated rolls. This mangle delivers the finished sheet to the inspector's buggy.

Where space is very limited the second pair of rolls in this second mangle may be dispensed with, but the extra pair is strongly recommended, as the rolling through three pairs of solid 6-in. polished

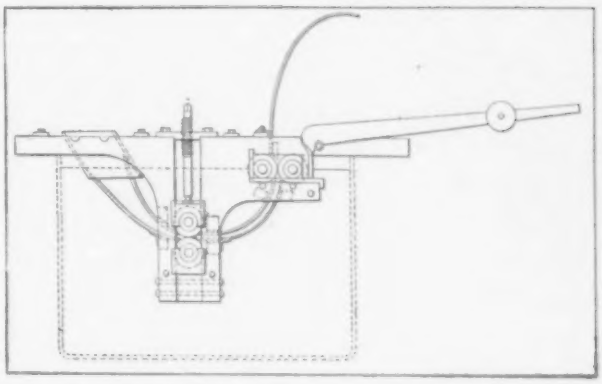


Fig. 2—Typical English Galvanizing Machine

rolls while the sheet is comparatively hot renders the use of the flattening machine unnecessary for any but the highest class of sheets.

### Relative Costs of Dry and Flux Dipping

It is almost impossible to put relative costs into dollars and cents owing to the fluctuation of the various materials, etc., entering into the computation thereof; therefore a comparative table of results obtained in the test hereinbefore mentioned is appended.

*Costs of Dipping per Ton of 2240 Lb.*

| | Dry Dipped Sheets No. 26 Gage | Flux Dipped Sheets |
|---|---|---|
| Spelter, lb. | 180 | 199.9 |
| Muriate of ammonia, lb. | 9 | 13 |
| Glycerine, oz. | 0 | 2 |
| Tallow, oz. | 4 | 6 |
| Fuel drying furnace | 0 | about 10c. |
| Labor, feeders | 1 | 1 |
| Labor, dippers | 1/2 | 1 |
| Labor, inspectors | 1 | 1 |

Note: One dipper takes care of two pots when sheets are dry dipped. The feeders and inspectors are boys. A diagram outline of this plant is shown in Fig. 1.

The appended cost sheets of No. 24 gage sheets, English and American, may prove of interest. It is needless to remark that both are based on ante bellum conditions, and are for dry-dipped, not flux-dipped sheets.

*Cost per Ton, F. A. S. of No. 24 B. W. G. English Galvanized Corrugated Sheets*

| | c | q | lb. | | £ | s | d |
|---|---|---|---|---|---|---|---|
| Black sheets | 18 | 3 | 14 | at £6 | 5 | 13 | 3 |
| Spelter | 1 | 2 | 14 | at £24 | 1 | 19 | 0 |
| Total weight | 20 | 2 | 0 | | | | |
| Loss in pickling | | 2 | 0 | | | | |
| | 20 | 0 | 0 | | | | |
| Hydrochloric acid..2 cwt. at 1/5 } can be all | | | | | | 2 | 10 |
| Vitriol ..... 1/2 cwt. at 2/ } sulphuric | | | | | | 1 | 0 |
| Coke for firing pot and drying furnace | | | | | | 1 | 0 |
| Coal in boilers, including light | | | | | | 1 | 0 |
| Muriate of ammonia (flux), 11.0 lb. at 2 3/4 d. | | | | | | 2 | 7 |
| Loss on dross | | | | | | 1 | 6 |
| Loss on wasters, 2 per cent of sheets at £2 per ton, say | | | | | | | 9 |
| Labor, galvanizing and pickling | | | | | | 3 | 0 |
| Labor, coking and cleaning, £4.5.0 per week | | | | | | | 4 |
| Labor, corrugating | | | | | | | 10 |
| Labor, packing and warehouse | | | | | | 1 | 6 |
| Trade charges weekly: | | | | £ | s | d | |
| Salaries | | | | 12 | 0 | 0 | |
| Clerks | | | | 4 | 5 | 0 | |
| Weighbridge and stores | | | | 2 | 0 | 0 | |
| Warehouse clerk | | | | 1 | 10 | 0 | |
| Engineering staff: | | | | | | | |
| Fitter | | | | 2 | 0 | 0 | |
| Labor | | | | 1 | 10 | 0 | |
| | | | | | | 1 | 3 |
| Interest on capital, £9000 at 5 per cent per annum | | | | | | | 1 |
| £4500 depreciation (a) fixed plant and buildings, 5 per cent | | | | | | | 1/2 |
| £1000 (b) Motive power .. 7 1/2 % per annum } | | | | | | | |
| £ 750 (c) Pot rolls ..... 33 1/3 % per annum } | | | | | | | 1 1/2 |
| £ 250 (d) Pots .....100% per annum } | | | | | | | |
| £1500 (e) Spelter in pots. 5% per annum } | | | | | | | |
| Renewals of wearing parts of galvanizing gear | | | | | | | 2 |
| Light, wages and carbons, etc., £4.5.0 per week | | | | | | | 4 |
| Oil and stores | | | | | | | 2 |
| Freight to Liverpool estimated at | | | | | | 1 | 8 |
| | | | | | | £8 12 10 or $41.48 | |

Packing for export shipment is of various kinds, but is an extra, and paid for as such, so that it is not taken into account in the works cost sheet.

*Cost per Ton of 24-Gage American Galvanized Corrugated Sheets*

| | Pounds | | |
|---|---|---|---|
| Black sheets | 1850 | at $43.10 | $39.86 |
| Loss pickling | 50 | | |
| | 1800 | | |
| Spelter | 200 | at $0.065 | 13.00 |
| | 2000 | | |
| Acid | 120 | at $0.005 | .60 |
| Fuel for firing pots | | | .25 |
| Power | | | .50 |
| Muriate of ammonia (flux), 12 lb. at $0.05 | | | .60 |
| Loss on dross | | | .40 |
| Loss on wasters, 2 per cent of sheets | | | .20 |
| Labor: | | | |
| Galvanizing | | | .50 |
| Pickling | | | .35 |
| Fireman | | | .10 |
| Corrugating | | | .25 |
| Packing and warehouse | | | .10 |
| Warehouse clerical | | | .80 |
| Weighing | | | .10 |
| Repairs, labor | | | .20 |
| Renewals, machines | | | .20 |
| Renewals, rolls, collars and gears | | | .10 |
| Light | | | .10 |
| Oil and stores | | | .10 |
| Timekeeper and watchman | | | .05 |
| Overhead includes interest and depreciation | | | 1.00 |
| Total | | | $59.36 |

Quite recently the author, by the courtesy of G. A. White of the Titanium Alloy Mfg. Co., has had the pleasure of studying a booklet entitled "A Metallurgical Study of the Steel Base as Related to Galvanizing." Excerpts from this were published in THE IRON AGE, April 11, 1918, pages 934 and 935. The writer is not sufficiently posted on the actual handling of titanium alloy steel in sheet form (the same being at this writing not in common commercial use) to criticise that portion of the brochure, but the booklet is a valuable contribution to the knowledge of the art of galvanizing, the results obtained being a distinct advance over the usual commercial sheet.

With the conclusions as to the inclusion of hydrogen and the elimination of this gas by soaking in water and heat treatment, the author is quite in agreement. The flux dipped sheets as described in this article have uniformly large spangles. The base from which they are manufactured is a good quality of open-hearth steel carefully rolled, both in the bar mill and in the sheet mill. Great care is also taken with the pickling process and the inspection at all points is very rigid. Last and by no means least, after pickling the sheets are immersed in water for 72 hr. to one week and then brought up to a temperature of 700 to 800 deg. Fahr. before dipping.

Fig. 2 represents a typical English galvanizing machine. This is driven:

1. By direct gearing, that is, one large gear drives the top roll of the bottom pair and the inside roll of the top pair, the power being applied by belt from a line shaft and a step cone pulley is provided to give the necessary variation in speed for the different gages.

2. Motor drive mounted on the pot furnace cover plates, in which case the rolls are driven by worm gearing in a similar manner to the American type machine.

(*To be continued*)

## ANTI-STRIKE AMENDMENT

### Men Who Quit Work Lose Exemptions—Mr. Gompers' Protest Disregarded

WASHINGTON, Aug. 20.—Opposition by President Gompers of the American Federation of Labor to the Thomas "anti-strike" amendment to the new draft bill failed to keep that amendment out of the measure. It was accepted by the Senate Committee on Military Affairs. If it is adopted by both houses, workers who strike will lose their exemptions from the operations of the new law.

The amendment provides that "when any person shall have been placed in a deferred or exempted class for any of the reasons therein set forth, he shall not be entitled to remain therein unless he shall in good faith continue, while physically able so to do, to work at and follow such employment, and if he fails so to do he shall again become subject to the draft; the President is vested with authority to enforce this provision."

Concerning this, the committee report submitted by Chairman Chamberlain declared:

"It seems to the committee that in view of the fact we are about to authorize the drafting of the boys between the ages of 18 and 21 years, as well as those above 21 up to and inclusive of 45 years of age, and are providing for the exemption of men between 18 and 45 who are engaged in useful and necessary occupations from actual service in the ranks, that when they are exempted solely because their services are more valuable to the Nation in the production of things essential to the prosecution of the war, that when they cease in good faith to follow the essential occupation, they ought to be subject to the draft as in other cases. The young men not engaged in these occupations must wear the uniform, enter the ranks, and bare his breast to the weapons of the German Army. He cannot refuse to work even for an hour, and he is compelled to fight whether he feels disposed to do so or not. In view of this, when a young man is exempted from the draft solely in order that he may engage in essential industry, he ought to continue in that employment in good faith while any grievance he may have is being adjusted by the Industrial Board, and if he fails to do so, he ought to be placed in the same category and be subject to draft just as the young man is compelled to do who was not exempted to work in such industry and who has been compelled to go to the battle front to fight for his country. The provision does not pretend to interfere with the right of any man to cease labor whenever it pleases him to do so, but simply says to him that if he does cease he shall, under such regulations as the President may prescribe, subject himself to the draft as though he had not been exempted in the first instance. The justice of this provision, the committee believes, will appeal to the good sense and patriotism of the whole country."

Senator Thomas also put into the record the protest of Mr. Gompers to this amendment, as well as his own reply to the matter. It is likely that the fight will now be carried to the floor of both houses, for there is no indication that the labor leaders have surrendered their opposition.

### Fabricated Steel Business in July

Over twice as much fabricated steel tonnage was entered in the order books of fabricators in July as in June. The July total was about 210,000 tons, and probably fully two-thirds of this was for fabricated ship work which has been accumulating but not definitely entered until this last month. Since September, 1917, when the fabricated ship program got under way, the total amount of fabricated steel business has averaged about 127,000 tons per month, while shipments from fabricators' shops, at least lately, has been at a monthly rate of 125,000 tons. Contracting in the first nine months of 1917 averaged 92,500 tons monthly, but dropped from 122,500 tons in March to 52,000 tons in September. The foregoing statistics are based on the records of the Bridge Builders and Structural Society, George E. Gifford, 50 Church Street, New York, secretary. In July 116½ per cent of the capacity of the bridge and structural shops of the country was put under contract, compared with 56 per cent, the monthly average of the first half year.

## New Shell Turning and Boring Lathes

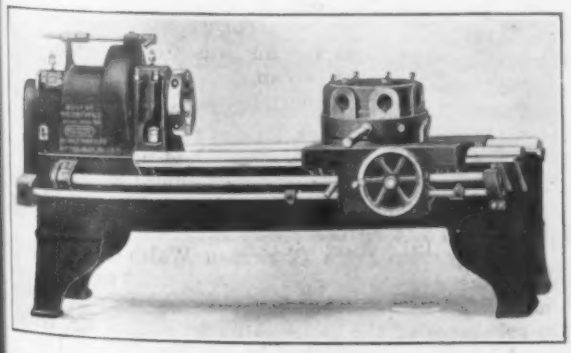
The Duff Mfg. Co., N. S., Pittsburgh, has recently brought out new types of the Hindman high-duty shell turning and boring lathes. In the construction of the 20-in. turning lathe, the headstock is of the same general design as the original tool, embodying improvements which, the maker states, make this lathe particularly valuable for rough turning shells up to and including 155 mm. It is powerful enough to rough turn with a cut ½ in. deep on a side with a feed of 0.125 in. at any speed the tool will stand.

The headstock is arranged so that it may be used for the finish turning operations by omitting the first set of gears and attaching a belt pulley to back gear pinion shaft, thus obtaining a ratio of five to one, which gives ample speed and power for these operations. The tailstock, which is of one-piece design, is particularly rigid, being bolted solidly to the bed by six large bolts, and equipped with a 4½-in. spindle. A handwheel of large proportions is provided, enabling the operator to secure the shell firmly in place with as little effort as possible. The carriage is stiff and strong, and has large bearing surfaces on the ways of the lathe, thus preventing side motion or yawing. It is furnished with both front and rear clamps accurately fitted. The tool post and cross-slide are one-piece steel castings heavily built and designed to stand up under very heavy cuts. The size of tool regularly used is 1¼ x 2-in. steel. Cross feed is obtained by hand operation.

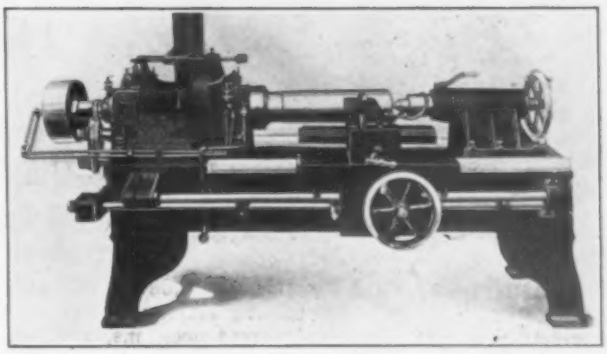
This shell turning lathe can also be equipped, if desired, with a rear tool slide which is a steel casting of substantial size and is fitted into a steel shoe bolted solidly to regular saddle by 1¼-in. bolts. It is operated from the front or rear either in connection with, or independent of, the front side. After both tools have been set, the slides may be operated with one handle by slip gears. Each slide is controlled by a large screw 1¾ in. in diameter and is fitted with a large bronze nut which can be removed very easily, when it is desired to use either tool slide in connection with a former. Air chucks can also be added if desired.

The headstock of the shell boring lathe conforms to the general design of the original lathe with added features to provide strength and rigidity. It is designed with a large spindle with a 7½-in. hole, 25 7/16 in. deep. This permits 155-mm. and 6-in. rough shell forgings to be held in it for practically their full length, which gives a shorter bed with a saving in floor space, eliminates the use of pot chucks and allows rough boring before rough turning if desired. The front of the spindle is designed so that large set screws can be used to hold shell instead of chucks.

The lathe is furnished regularly with a hexagonal turret of simple construction and provided with a powerful and rigid clamp over the entire surface of the turret base, sufficient to hold the turret against play under the heaviest cuts. The turret head is a steel casting of ample size to withstand all strains of heavy cuts and failure of tools. Rapid traverse in both directions is provided. This boring lathe can also be modified to take a saddle arranged for a single boring bar controlled by a former or a tailstock boring bar with power feed to the tailstock.



Tools for Several Operations Can Be Mounted in the Turret of a New Shell-Boring Lathe or a Saddle and Single Boring Bar, or a Tailstock Boring Bar with Power Feed to the Tailstock Can Be Substituted



Shells of the 6-In. and 155-Mm. Sizes Are Turned in a New Lathe Which Can Be Equipped with a Rear Tool Slide and an Air Chuck if Desired

## Meetings of Motor Truck Owners

Conventions of the Truck Owners Conference, Inc., are to be held in many of the larger cities in the next ten months. As announced by Harold P. Gould, chairman of the conference, plans have been laid for 19 two-day conferences in as many cities. The opening meeting will be held in Detroit, September 19 and 20, at the Board of Commerce Building. The official program will consist of Detroit speakers, each a well-known truck expert in his particular field. Special films of a few of the more efficiently operated truck fleets in Detroit and Chicago will be shown.

Addresses by both large and small truck operators on their experiences in using methods that reduce operating expense and general discussions on the facts thereby brought out will feature all conferences. The purpose throughout is to secure greater efficiency in truck operation the country over. The subjects discussed range from "Loading and Unloading Methods That Save Time" and "Hauling More Goods With Power Units" to "Simplicity and Advantages of Keeping Costs on the National Standard Truck Cost System."

The conferences are open to all interested truck users and no fee is asked. The conference is not open, however, to the trade with the exception of specially invited representatives. The various cities scheduled for conferences extend from coast to coast and each has been chosen because of a central location whereby as many cities as possible, especially in that locality, may be represented at each conference. Further information may be obtained by addressing the Truck Owners Conference, Inc., at 327 South LaSalle Street, Chicago.

## May Commandeer Stocks

WASHINGTON, Aug. 20—The recent demand made by the War Industries Board for an inventory of the steel which each automobile manufacturer had on hand July 16 will probably result in some of the companies at least, who have been able to hold considerable supplies of material, being compelled to share them with more essential war industries.

This procedure will be one of the first steps in the line of "commandeering" promised by Chairman Baruch to aid war industries. It is announced that he will not hesitate, in case of need, to commandeer such stocks of coal, steel, or other materials as may be in the hands of less important industries, provided no other way can be found to help essential plants. The shortage of coal is becoming greater each week. It is for this reason that the board has ordered a survey of a long series of industries, including the automobile industry, to determine just what stocks are on hand and how much of them may be taken by the Government to help out hard-pressed war industries.

The Mayer Brothers Co., builder of belt and motor-driven power hammers, Mankato, Minn., will change its name to the Little Giant Co. on Sept. 1.

# Urges Definite Declaration of Policy

## National Erectors' Association Protests Against Policy of Union—Umpire Appointed in Bridgeport Case — Bethlehem Decision Explained

WASHINGTON, Aug. 20.—The attitude of the National War Labor Board toward employers, as evidenced by several important recent decisions, and the drive which organized labor is now making to unionize establishments in all industries and especially those engaged in the production of iron and steel which heretofore have been tolerably free from union domination, are causing great concern among manufacturers in all lines, and there are indications of a movement to bring before the War Industries Board or some other representative agency the so-called "declaration of principles," originally promulgated as a code for the government of the National War Labor Board, in order that its real meaning may be construed in the light of the events of the past month.

The cases that have attracted the special attention of employers, as indicating that the National War Labor Board is developing a distinctly pro-labor leaning, are those of the Waynesboro manufacturers and the Bethlehem Steel Co., but others of less importance have also aroused interest. Special point has just been given to the matter by the presentation to the War Labor Board of a protest prepared by Walter Drew, representing the National Erectors' Association, in which the structural iron workers' union is accused of hostility to shipyards working on the open shop basis, and the charge is made that the union is disciplining its members by means of fines "as high as $1000 each for working in the shipyards." The protest delivered to the board bears the endorsement of the executive committee of the Bridge Builders' and Structural Society and the National Erectors' Association and bears the signatures of 113 structural iron firms, said to represent more than 60 per cent of the productive capacity of the industry. The protest is in part as follows:

### The Rights of Workers

The "right of workers to organize" as announced by your board is construed as sanction by the Union for the institution of an aggressive and systematic campaign to unionize the structural shops of the country, which are now operating on terms of peace and harmony with their employes. Union agents from outside appear in different localities and endeavor by personal solicitation, circulation of literature, holding of meetings and other methods of agitation to create a sense of grievance, discontent and unrest among the shop workers. One feature of this campaign is the circulation of all sorts of false and misleading rumors to the effect that the Government intends to unionize the country, that none but union men can be heard before the War Labor Board, that private association employment agencies will be abolished and only union men employed through the Federal service, and many like statements. The necessary effect of all this upon the morale, discipline and efficiency of the shops is obvious.

The right of workers to join a union is not questioned, but it is submitted that the "right of workers to organize" and the right of a national union to institute a country-wide attack in war time upon peaceful establishments whose operation is most essential to war production are two very different things. To construe any principle of the board as a sanction for such an attack is to pervert the board into an instrument not of the national welfare, but of the selfish purposes of an organization attempting to take advantage of the common necessity.

Mr. Drew then speaks of the record of the Structural Iron Workers' Union, referring especially to the activities of many of its members in dynamiting shops several years ago. He says that because of the failure of the union to obtain a closed shop in ship construction work and because of dissatisfaction with the classification of workers adopted on ship work, the union is hostile to shipyard work. Its official publication, the *Bridgemen's Magazine*, contains reports by its national and local officers referring to the shipyards as a "slackers' paradise" and to iron workers employed there as "scabs," "rattlers," "yellow dogs" and "slackers."

In conclusion, Mr. Drew says: "It would be of great service to those charged with the responsibilities of production if the board would make the clear distinction between the right of a worker to join the union and the right of a union to institute a systematic organizing campaign against peaceful establishments. Certainly if it is held that the union has such right, it is obvious that it should be accompanied by some very material and definite conditions and modifications if disorganization and disaster are to be avoided in essential war industry."

### Invitation to Unionize

There can be no doubt that the leaders of organized labor regard the "declaration of principles," adopted as the platform of the National War Labor Board, as an invitation to unionize every industry that is regarded as worth the trouble and this in spite of the fact that the adoption of the declaration and the creation of the board had for their chief object, according to an official announcement, the holding of an even balance between employers and employees, between capital and labor for the duration of the war. The National War Labor Board was appointed as the result of a labor conference participated in by representatives of both employers and employees for the purpose of reaching an agreement, the enforcement of which under competent authority would prevent either capital or labor from using the war emergency to secure any advantage.

### The Bridgeport Controversy

In the case of the Bridgeport, Conn., wage adjustment, the National War Labor Board has been obliged for the first time to call in an umpire to break a deadlock of the full board, the section which heard the case having previously disagreed and referred the case to the full board for a decision. The original section was composed of Frederick N. Judson and Frank P. Walsh, chairmen, Loyall A. Osborne and William H. Johnston. There was some dissatisfaction among the union members in a few shops because of the delay in the announcement of the award and at a meeting held Aug. 14 it was voted to go on a strike of protest against further delay. At noon, Aug. 15, about 800 men from the Remington and a few other plants went out, but at a meeting that night it was voted to resume work.

This action resulted from the receipt of a telegram from Chairman Walsh and Mr. Johnston urging the workers to refrain from stopping production until the award could be handed down. The message said that the board having disagreed, the matter would be referred to Otto M. Eidlitz, Director of the Housing Bureau, Department of Labor, who had accepted the position of umpire and would begin immediate consideration of the various phases of the matter on which the Board could not agree.

The telegram from Chairman Walsh was a confidential message to Samuel Lavit, district agent of the Machinists' Union. The *Bridgeport Telegram* quoted the substance of the message as follows: "Mr. Walsh stated in the message that he confidently looked for a decision from the board that will substantially meet with the demands of the machinists for a minimum wage. The telegram further stated that not only would the award of the board be a decision in the local

issue, but that it would establish a labor precedent and revolutionize wage scales throughout the country."

### The Bethlehem Case

With reference to the question that has arisen concerning the board's application of the 8-hr. day to the Bethlehem Steel Co. controversy, the War Labor Board has issued the following official statement:

In the statement made public under the authority of the National War Labor Board on Aug. 4 with respect to the board's findings in the case of the Bethlehem Steel Co. it was made to appear that the basic 8-hr. day had ben applied throughout the company's plant at Bethlehem, Pa. In this regard the statement was in error, since the application of the basic 8-hr. day was not included in the finding. The basic 8-hr. day does now and has applied in the machine shops at Bethlehem. It does not apply, under the War Department's interpretation of the 8-hr. law, to those branches of the Bethlehem plant engaged upon the production of steel billets, rolled steel or other unfinished products made for the open market.

In these branches at Bethlehem the present workday remains unchanged under the findings of the board, the only action of the board with regard to the basic day being to declare that overtime beyond the usual workday should be compensated for at the rate of time and half time and that work on Sundays and holidays should be paid for at the rate of double time; and that in the fixing of piece rates provisions be made for overtime payment as now provided in the case of time workers.

## Cases Assigned

The National War Labor Board has made the following assignment of cases to sections of the board, one member in each representing labor and one representing capital:

Frank P. Walsh and Frederick N. Judson, the joint chairmen, representing the public: Controversy between Smith & Wesson Co. and its employees at Springfield, Mass.; referred to the board by the War Department.

Victor A. Olander and C. Edwin Michael: Controversy between Stove Mounters' International Union, Local No. 8, and the Estate Stove Co. of Hamilton, Ohio. The question involved in this case is whether the company, which has conducted a closed union shop up to date, should be required to maintain the same conditions in a new factory recently put into operation.

Mr. Wilkinson and John F. Perkins: Controversy between the Amalgamated Association of Iron, Steel and Tin Workers of North America, and the Southern California Iron & Steel Co., Los Angeles, Cal., involving a demand for recognition of the union by the company, increased wages and reduced working hours.

T. M. Guerin and B. L. Worden: Controversy between the New Jersey State Association of Electrical Workers, and the T. A. Gillespie Co., South Amboy, N. J. The complaint of the workers is that the company has discriminated against members of the union in its employ.

Messrs. Guerin and Worden: Controversy between building trades unions and employers of Cleveland, involving the establishment of a wage scale for unskilled labor.

Mr. Olander and W. H. Van Dervoort: Controversy between Federal Labor Union 16104 A. F. of L. and the Emerson Brantingham Mfg. Co., Batavia, Ill., involving demand for readjustment of wages and hours, and the application of principles of the National War Labor Board.

Messrs. Wilkinson and Perkins: Controversy between the A. M. Byers Co. and employees in its wrought iron pipe plant at Girard, Ohio, affecting approximately 1200 workers, and involving, according to the company, an attempt to compel it to apply the wage scale of the Amalgamated Association of Iron, Steel and Tin Workers.

T. A. Rickert and Mr. Michael: Controversy between the Pattern Makers' League and the Metal Trade Employers, Birmingham, Ala., involving a demand for the basic 8-hr. day and wage increases.

Thomas J. Savage and Mr. Rice: Controversy between the National Association of Machinists and Klieber & Dawson Co., Indianapolis, involving right of workers to join trade unions without fear of molestation by employers.

Mr. Worden and labor member, not yet named: Controversy between the Amalgamated Association of Iron, Steel and Tin Workers vs. the American Sheet & Tin Plate Co., in its plants at Elwood, Ind.; Martins Ferry, Ohio; Cambridge, Ohio; New Castle, Pa., and Sharon, Pa., involving the right of workers to organize and to bargain collectively.

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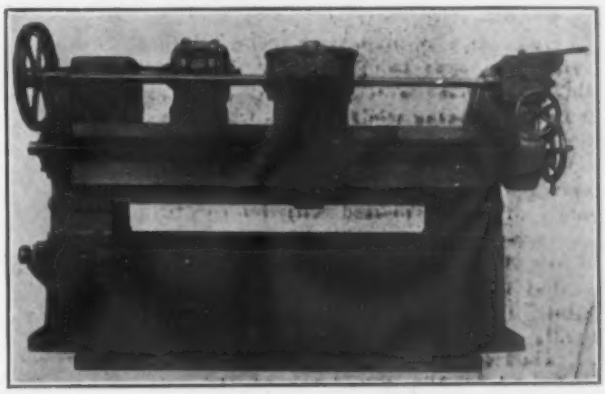
Marshall & Huschart Machinery Co., Chicago, completed on Aug. 15 its twentieth year in business.

## Machine for Milling Scarfs in Plates

The Newton Machine Tool Works, Inc., Twenty-third and Vine streets, Philadelphia, has recently brought out a deck plate scarf milling machine. Some of the interesting features about the machine are the use of self-contained cross-rail, provision for accurate duplication of the various bevel angles and the securing of the necessary variation in speed by a gearbox without removing any gears.

The base has an oil pan cast integral with it and contains the pump, piping and necessary attachments for conveying lubricant to the point at which the milling cutters operate. The upper surface of the base is finished to serve as a work table, 110 in. long and 57 in.



Bevels or Scarfs in the Edges of Steel Deck Plates Are Produced by the Milling Method in a Recently Developed Machine Provided with Means to Secure Accurate Duplication of Angles

wide, for clamping the plates. In the surface a number of T-slots run parallel with the cross-rail from end to end of the table, and aligning slots are planed at right angles to these. This arrangement of slots together with a number of drilled holes for locating stops to take the side thrust of the cut, is relied upon to permit the plates to be located in the most convenient position for work and hold them square. Separate sets of uprights which are mounted on the base are provided to take care of the various angles at which bevels are milled by the machine. Each pair of uprights has an angle for its particular scarf and provision is made through the use of aligning keys to insure exact duplication of position when changes are made from one set of uprights to another.

The cross-rail was orginally designed to be portable and is therefore self-contained. The head has a geared feed in both directions of 9 ft. and the spindle saddle has a hand cross adjustment on the rail. The construction of the saddle is heavy and includes the narrow guide aligning feature. A vertical adjustment of 10 in. by a rack controlled by a worm and wormwheel by hand movement is provided for the spindle sleeve.

The machine is driven by a 25-hp. motor which transmits power to a speed change gearbox located at the back of the left upright. This box provides six speed changes through gears mounted on sliding sleeves and controlled by two latch levers. The connections between the motor and the gearbox and between the latter and the horizontal driving shaft on the cross-rail, are made by spur gears. From the horizontal driving shaft the power is transmitted to the spindle by a worm and wormwheel, both of which are incased to give continuous lubrication. The worm is of hardened steel fitted with roller thrust bearings and the wormwheel has a bronze ring with teeth of steep lead, a construction common to all of the builder's machines. The motion for the feed is taken from the right side of the cross-rail, and three changes are provided by gears. This feed is available in both directions by a clutched double train of bevel gears at the right end of the cross-rail which are fully protected by guards.

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The George H. Smith Steel Casting Co., 500 Clinton Street, Milwaukee, has awarded contracts for the construction of a large heat-treating furnace unit.

## Babbitt and Babbitted Bearings

Superior resistance to deformation at the working temperatures of bearings was found to be possessed by a lead-base babbitt metal as compared with one having a tin base in a series of experiments carried out in the chemical laboratory of the Westinghouse Electric & Mfg. Co., Pittsburgh. These results are embodied in a paper to be presented at the Milwaukee meeting of the American Institute of Mining Engineers by Jesse L. Jones, metallurgist of that company. In making these tests, three different babbitts having composition represented in the accompanying table were used.

| | *A* | *B* | *C* |
|---|---|---|---|
| Antimony | 8 | 8½ | 14 |
| Copper | 2 | 8½ | Nil |
| Lead | Nil | Nil | 78 |
| Tin | 90 | 83½ | 8 |

Disks, 4 in. in diameter and 1½ in. thick were made, pyrometer leads being soldered in the center of each disk. The disks were heated by an electric hot plate, the heating being controlled by rheostats, and the thermocouple leads were connected to a potentiometer for measuring the temperatures. The Brinell hardness tests were made on the bottom surfaces of the disks, and a series of curves plotted with temperature and Brinell hardness numbers as the coordinates. The hardness of the *A* and the *C* babbitts was identical at 35 deg. C., but the latter had the greater hardness above this point. The curves for the other two babbitts were practically parallel and not far apart, and slowly approached each other. The result of these tests is also confirmed by the experience of the company in connection with the bearings in a great variety of its motors. The number of deformed bearings that had to be rebabbitted was about 100 per month with the *A* babbitt, while not more than six per month needed renewing when the *C* composition was employed. These results have led to the adoption of the latter for all classes of machines and the complete elimination of the tin-base babbitt.

To determine the effect of compression of babbitt on its Brinell hardness, two phosphor-bronze plates measuring 2 in. on a side and ½ in. thick were machined all over. One face was then tinned and babbitted with ¼ in. of the *B* metal in one case, and the *C* metal in the other. The babbitt was machined to ¼ in. and the samples subjected to a compressive test so designed that the load would be distributed as uniformly as possible. The successive loads and the corresponding Brinell hardness tests are given in the accompanying table.

| | *B* Babbitt | | *C* Babbitt | |
|---|---|---|---|---|
| Load, Lb. Per Sq. In. | Compression, In. | Brinell | Compression, In. | Brinell |
| 8,500 | 0.0020 | 33.6 | 0.0015 | 23.8 |
| 10,000 | 0.0020 | 33.6 | 0.0020 | 23.8 |
| 11,000 | 0.0055 | 33.6 | 0.0030 | 24.8 |
| 12,000 | 0.0085 | 33.6 | 0.0032 | 24.8 |
| 13,000 | 0.0140 | 33.6 | 0.0102 | 24.8 |

It will be noticed that the lead-base babbitt *C* withstood compression better than the one having a tin base, although when the load was increased to 30,000 lb. per sq. in., the latter presented the better appearance, since the babbitt has flowed uniformly in all directions over the edge of the bronze square, while the lead-base metal compressed more on one side than on the other. The bronze also flowed appreciably at a load of 30,000 lb. From these tests, it is apparent that broaching, peening, etc., do not appreciably increase the hardness of the babbitt metal and this hardness must be obtained by quickly cooling the lining by water-cooled mandrels, etc.

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The Bureau of Industrial Housing and Transportation has completed its housing project for Bridgeport, Conn. Bridgeport is one of the half dozen most congested munitions cities in the country. Contracts have been awarded there for housing accommodations sufficient to take care of 600 fmailies. Building has already been begun on four sites, so chosen as to make them available for all of the munitions manufactories of the city. The bureau expects also to build dormitory accommodations for about 1000 workmen at Bridgeport.

## Hot Blast-Furnace Slag Makes Good Fill

Large quantities of blast-furnace slag in the Pittsburgh district are disposed of, according to *Engineering News-Record*, by dumping it to form railroad embankments and to fill areas of low ground which may then be utilized as industrial sites. Molten slag is hauled several miles in short trains of special ladle cars. Cold open-hearth slag is also disposed of in large quantities. About 1,600,000 tons of refuse is so distributed annually. The hot material is said to have proved very satisfactory for railroad embankments.

Transporting and dumping the molten slag is a special class of business on the Union Railroad, which is a terminal line serving principally three of the large plants of the Carnegie Steel Co. in the Monongahela valley. These include the Edgar Thomson works, the Duquesne works, and the Homestead plant with its auxiliary the Carrie furnace, at Rankin. They have a total of 24 blast furnaces. Later the railroad will serve also the Clairton plant, with three furnaces.

Slag output from the 24 furnaces has been about 2,000,000 tons per year for several years, and about 80 per cent of this is disposed of by dumping in molten condition, mainly along the line of the Union Railroad. Its weight in the dump averages 2800 lb. per cu. yd. Most of the molten slag not used in this way is granulated for use in the manufacture of portland cement, and for temporary ballast, yard ballast and special filling on the railway.

In addition to blast-furnace slag, there is "cold filling" which averages more than 100 cars or 5000 tons per day. This includes open-hearth slag, ashes and all other kinds of refuse shipped from the mills. It is used in making fills for plants, railway embankments and yards. Large quantities are turned over to the Bessemer & Lake Erie Railroad for similar use on its lines. After all this supply for useful purposes there is still a large amount that must be disposed of as waste.

For disposal of the molten slag and cold waste the Carnegie Steel Co. has acquired low-value ground in tracts of 60 to 400 acres along the line of the Union Railroad. The largest is at Mifflin Summit, where dumping of molten slag has been in progress for about five years, and will continue for many years. The site is at the headwaters of some small streams and presented filling accommodations for 30,000,000 to 40,000,000 cu. yd., depending upon the final elevation of the surface. Of the smaller tracts, 60 to 100 acres each, some are for hot filling and others for cold filling. This facilitates operations and avoids trouble from fires starting in the cold filling.

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## Would Prevent Rent Profiteering

WASHINGTON, Aug. 20—Reports of rent profiteering in munition areas and other war industry centers have increased to such an extent that the Labor Policies Board has decided to ask Congress to give the President power to end such conditions. The board has approved the principle of a bill submitted by the Bureau of Industrial Housing and Transportation designed to prevent rent profiteering. The Housing Bureau reported that certain landlords in munitions areas are endangering the national defense by unreasonable and excessive rental charges. It was reported that municipal authorities which lack the power to deal with the evil have appealed to the Federal Government, and that the war production departments have found that extortionate rentals are creating industrial discontent and are seriously retarding war production.

In its resolution the Policies Board petitioned Congress to extend to other war workers the same effective protection against profiteering which was accorded ship workers under the Naval Emergency Fund act. The bill presented would authorize the President for the period of the war to control rental charges in certain districts and to requisition all rights and interests in those areas where reside industrial workers who are engaged in arsenals, shipyards, navy yards, other federal agencies, and in industries connected with and essential to the national defense.

# Bethlehem Ore Bridge Built in 65 Days

## Rapid Reconstruction of Structures of the Bethlehem Steel Co., Replacing Two Destroyed by a Violent Storm

ON the evening of May 27, 1918, Bethlehem, Pa., was visited by a severe rain, wind and electrical storm which developed at certain points the destructiveness of a tornado. Trees several feet in diameter were twisted off and uprooted, and generally, the storm left havoc in its wake.

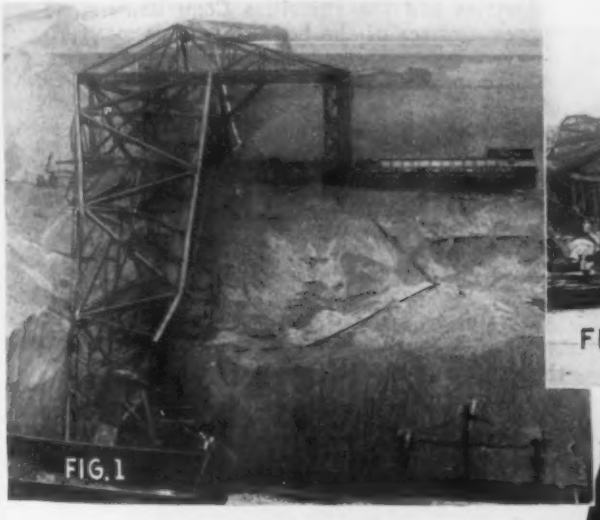
In passing over the steel works of the Bethlehem Steel Co., it paid particular attention to the two Hoover & Mason ore bridges with the result that they both were upset and totally demolished. These two bridges traverse a runway running due north and south, and as the general direction of the storm was southerly, the bridge structures offered the maximum area to wind pressure. The holding mechanism of the northern bridge let go and allowed this bridge to travel approximately 200 ft., striking the second bridge on center of runway and starting it off with tremendous impetus, which, assisted by the high gale, drove the bridge with a velocity of approximately 30 miles an hour over the end of the tracks. At this point the bridge supporting towers left the trucks and collapse occurred, as indicated in Fig. 1 After hitting and starting the second bridge on its way to destruction, the first bridge left its trucks and collapsed; see Fig. 2.

The loss of two ore bridges was obviously a very serious handicap, particularly so when ore is being placed in storage for winter requirements and thousands of tons are in transit and in the plant storage yards awaiting unloading. This situation was overcome to a great extent by locating temporary tracks on top of the ore piles and conveying the ore from the car dump bins by means of power driven side-dump cars. By this method of unloading the steel company was enabled to handle the incoming ore in a fairly satisfactory manner, at, however, a greater cost.

The necessity for replacing these bridges was of vital importance, and this article is written primarily to call attention to the speed of reconstruction and the time the new bridge was fabricated from materials practically from the ore and placed in operation.

The bridges were wrecked May 27, about 7.30 p.m. The work of demolition and cleaning up was concentrated on the bridge at the south end of the runway, and in the course of three days the main thoroughfare tracks connecting the Lehigh and Saucon plants which were blocked by the wreckage were opened up. This work was greatly facilitated by the use of gas torches.

The biggest problem was to manufacture new



THE STORM-DEMOLISHED ORE BRIDGES AND THE NEW BRIDGE READY FOR OPERATION IN 65 DAYS

Fig. 1—A general view of bridge No. 1, which collapsed approximately in the center of runway.
Fig. 2—A close-up view of east end of bridge No. 2 at south end of runway.
Fig. 3—A general view of No. 2 bridge, which is lying approximately on the site on which new bridge was erected.
Fig. 4—Condition of new ore bridge on July 20.
Fig. 5—New bridge ready to start operations.

trucks in time so that the towers and bridges could be erected directly thereon without the use of sand jacks and supporting falsework which would have meant extra work and delay. The first truck was placed on runway July 1, and the second July 7. The plates for these trucks were rolled from the ore at the Bethlehem Company's Sparrow's Point plant. The wooden bents and falsework for erection of the bridge were started June 15 and finished July 3. Erection of steel was started July 2 and was completed July 26; the final shipment being received July 11. Riveting was started July 14 and completed July 28. Some 32,000 rivets were driven in the field. The total weight of the structural steel work fabricated is 850 tons, and the machinery, exclusive of bucket amounts to 95 tons additional.

These two bridges are of Hoover & Mason design. The total length of each bridge is 550 ft.; the distance from center to center of towers, 252 ft.; capacity, 15 tons. The first bridge was finished at 12.30 p.m., July 31, and was placed in operation at 3.00 p.m. the same day, giving a total elapsed time for the fabrication of the bridge, manufacturing all necessary machinery, installing it and placing the bridge in operation of 65 days.

The structural steel work was fabricated and erected by the Bethlehem Steel Bridge Corporation at the Steelton plant. The remainder of the work, covering trucks, trolley and all machinery therefore, was made in the Lehigh plant of the Bethlehem company, with the exception of a few special parts which were furnished by Hoover & Mason. All the materials and parts were assembled and placed in operation by the various Bethlehem service departments.

The second bridge is now undergoing reconstruction and while the necessity for its service is not so great, it is hoped to place this bridge in operation in approximately 90 days from date of beginning reconstruction.

## Alabama Manufacturers Form Association

At a recent meeting of a number of leading manufacturers from all parts of Alabama, held at Birmingham, definite steps were taken for the organization of a new State organization to be known as the Alabama Manufacturers' and Operators' Association, designed to act for the different industries of the State, working in conjunction with the local division of the resources and conversion section of the War Industries Board.

Following the organization of a committee at the initial meeting, Aug. 5, to arrange details of organization, officers were elected for the ensuing year and by-laws adopted for the new association. This committee was composed of D. B. Dimmick, American Casting Co., Birmingham; George W. Connors, Connors Weyman Steel Co., Birmingham; and Julius Goslin, Birmingham. Mr. Connors and Mr. Dimmick were elected unanimously as president and vice-president, respectively, of the association.

Among the iron and steel interests represented at the first meeting were: J. E. Philips and E. P. Cooper, Central Foundry Co.; V. Ferguson, United States Cast Iron Pipe & Foundry Co., Bessemer; Louis Hoster, Bessemer Foundry & Machine Co., Bessemer; W. L. Weyman, Strickland Brothers' Machine Co., Tuscaloosa; Otto Agricola, Campbell Mfg. Co., A. & J. Mfg. Co., Gadsden Pipe Co. and Coosa Pipe & Foundry Co., Gadsden; C. W. Kling, Home Industry Iron Works, Mobile; A. W. Shook, Jr., National Pipe & Foundry Co. and Superior Mfg. Co., Attalla; William E. Mitchell, Anniston Steel Co. and the Alabama Power Co., Birmingham; J. E. Haffner, Bessemer Soil Pipe Co., Bessemer; F. O. Tyler, Anniston Mfg. Co., Anniston; and G. A. Jones, Rabell Mfg. Co., Selma.

The Thomas Furnace Co., Milwaukee, manufacturer of low phosphorus iron, has awarded a contract to the Meredith Bros. Co., Milwaukee, for the construction of a new hot blast stove of the Crook & Massick type.

## Munition Making in Canada

TORONTO, ONT., Aug. 17.—On what a gigantic scale are the operations of the Imperial Munitions Board in Canada is indicated in an official statement of the board that the total value of contracts for shells, raw materials and supplies of various kinds up to May 31 last was $1,200,000,000. No less than $1,000,000,000 has been paid out on account of these orders by the board to the same date. Of this expenditure, shells accounted for $664,300,000, the total number of shells produced in Canada to the end of May being 59,390,000. Fifteen per cent of the total expenditure of the British Ministry of Munitions during 1917 was spent in Canada.

The number of factories engaged in the Dominion in the production of munitions is 450. Of these, 150 factories are occupied in machining the steel shell and assembling component parts which are supplied to them by the board, while 300 factories are producing component parts, which are forwarded to the machine plants to be turned into the complete shell. From 50,000 to 80,000 tons of steel and from 1,500,000 to 2,000,000 forgings are handled monthly by the Imperial Munitions Board. To July 31, approximately 2,100,000 tons had been received and distributed by the steel department of the board, resulting in the shipment to machining plants or for export of 75,000,000 forgings for shells of various sizes.

## Materials for Bicycle and Motorcycle Industries

WASHINGTON, Aug. 20.—The War Industries Board has announced that it will recognize the bicycle and motorcycle industries as "entitled to their reasonable requirements of materials." This decision followed a meeting on Saturday between representatives of these industries and the Priorities Commissioner and other representatives of the board. At this meeting, it was developed that in recent years bicycles have come to be used, particularly in industrial centers, as a method of transportation to and from places of employment, and that their pleasure use, formerly predominant, has become relatively unimportant. In the case of motorcycles, it was shown that the output of the factories was absorbed almost entirely by direct Government purchases and that the remainder was devoted largely to essential commercial purposes. It was decided, however, that in the manufacture of both bicycles and motorcycles there were opportunities for substantial savings in the use of steel and rubber, and representatives of both industries pledged themselves to effect these savings through a program of conservation to be worked out with the Conservation Division of the War Industries Board. Subject to these pledges and to the carrying out of the conservation plans, it was considered necessary, says the announcement of the board, to recognize these industries as entitled to their reasonable requirements of materials.

## Correspondence Course in Industrial Engineering

The Woods Industrial Engineering Co., Bridgeport, Conn., has prepared a correspondence course of study in industrial engineering. The data in the course have been gathered from the experience of Clinton E. Woods, who is the author of "Organizing a Factory," "Practical Cost Accounting," "Unified Accounting Methods for Industrials," etc. The course involves 40 working lessons and nine lectures on theory, illustrated by nine charts and 114 working forms. The subjects are divided into nine groups, namely: Organization control; inventory control; production control; labor control; depreciation control; overhead control; cost accounting; commercial accounting; and controlling accounts.

The Gardner Machine Co., Beloit, Wis., manufacturer of disk grinders and grinding wheels, has presented each of its employees a free life insurance policy issued under the group insurance plan.

# Combustion Train for Carbon Determination

## Apparatus Giving Results in 6 Min. and Meeting Color Test Inaccuracies Arising from Varying Heat Treatment of Samples

—BY J. B. STETSER AND R. H. NORTON—

ONE of the minor changes forced by the war that will be instantly recalled by any steel works' chemist is the almost total elimination of the Eggertz or color method for running preliminaries and the substitution of various rapid combustion methods. This change has been due to the great amount of steel made on foreign orders, on which there has been chemical requirements calling for very small variation in the carbon content; to similar orders to supply the needs of our own Army and Navy; and, in general, to quantity production of high-grade steel suitable for heat-treating to rigid physical specifications.

The inaccuracy of the color test being known by all well-informed chemists, it was necessary to discard it and substitute the more accurate combustion method. Owing to the fact that there are steel works' laboratories that, for various shortcomings, such as inexperienced chemists, illy informed superintendents, rule of thumb melters, etc., still cling to the old color carbon, it may be well to explain its theory and error.

The color test is based on the assumption that the carbon in steel when dissolved in dilute nitric acid will give a certain depth of color that varies directly as the percentage. By comparing the color given by an unknown sample with the color given by a sample in which the percentage of carbon is known results are obtained. It is the policy to have the standard as near like the unknown sample as possible, both in percentage of carbon and method of manufacture and heat treatment.

### Color Test Fails on Quickly Cooled Specimens

When applied to normalized or any slowly cooled steel, this assumption is almost correct. We have checked hundreds of combustion results on drillings from slowly cooled heads, against color results on the same drillings and found only several to vary more than two points, even when carbons ran as high as 0.60 per cent. The conditions are different when we deal with preliminaries; which, to be of use, must be cooled quickly. In this respect, even air cooling must be considered as quick cooling.

In normalized steel, the carbon is all in the form of pearlite. In the quickly cooled steel, we may have the carbon in any form from sorbite to martensite. The error of the Eggertz method is due to the fact that a certain percentage of carbon in one form does not give the same depth of color as the same percentage in another form. For example, a sample containing 0.50 per cent carbon in the form of pearlite will not give the same amount of color as one containing 0.50 per cent carbon in the form of sorbite.

Owing to various causes, it is impossible to cool each test so that the carbon is always in the same condition, and for this reason it is useless to try to provide a standard of like heat treatment.

We have checked many combustion results on preliminaries against color results on the same drilling using a Government standard for comparison. Some showed as much as 0.15 per cent low; others, as much as 0.15 per cent high. In other words, a preliminary of 0.40 per cent carbon might show color results anywhere from 0.25 to 0.55 per cent. Such cases are unusual, but the average error is too great to risk.

These errors, it may be noted, are not due to the chemist nor to the method of procedure, but the fact that the method is in error. Color results may be checked and rechecked; boiling the tests in water, boiling them over the naked flame, using phosphoric acid, or any other method; yet, when checked against a combustion, they will prove wrong.

### The Call for Simplified Combustion Train

The change being made to the combustion method, it was soon found necessary to decrease the time taken to obtain results. Most of the methods in use before the war called for actual running time of from 10 to 25 min. Under these conditions it required at least 15 min. to report results to the furnace, being longer than necessary for a color determination, and leading to inaccurate finals on account of furnace changes while the test was in the laboratory. The trains then in use and the method of using them, led to inaccurate results in the hands of unskilled men. This caused error and confusion when the rapid expansion of the steel industry found a lack of trained chemists. This led to a further need of simplifying the train and method of procedure.

The necessity for more rapid and less complicated trains has led to various new absorbents, bulbs and methods, most of which are for the better. The present day trains are superior to those in use a few years ago, though, in some cases, accuracy has been sacrificed to speed.

### Results Reported in 6 Min.

It was with the hope that the train and methods used by the authors might prove of interest that the present article was written. It is, we believe, the fastest train in use, as we have checked standard in 2 min. actual running time on the train; though our usual procedure is to allow 3 to 4 min. for combustion. Results are often reported in 6 min. after the test enters the laboratory, including time for drilling, weighing sample, running test, weighing bulb and reporting result. No special type of furnace is needed, any furnace giving 1800 deg. being satisfactory. Temperatures as low as 1600 deg. have been satisfactorily used, but are not recommended. The method of procedure has been simplified and standardized so that there is no chance of error when directions are followed. We have used this train for over a year and find that it gives accurate results even when used by men who have had no practical experience running combustions.

Before passing to a description of the train, it will probably prove of advantage to give a short outline of the evolution of the combustion method. The original method called for solution of the drilling in potassium cupric chloride, the precipi-

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tate containing the carbon being filtered off and burned in a current of oxygen. The $CO_2$ evolved was absorbed in dilute potassium hydrate; calcium chloride or sulphuric acid being used as a dryer. Sometimes the $CO_2$ was absorbed in a barium hydrate solution, the precipitated barium carbonate being filtered off, burned and weighed. This is the so-called wet method and required many hours to complete, due to the time necessary to dissolve the drillings. The time for completing the analyses was much shortened by the discovery that the carbon might be burned to $CO_2$ by direct combustion of the drillings. As no absorption train had been designed that would absorb $CO_2$ and moisture when the gas containing them was passed through it at a rapid rate, the method still required an hour. This defect was remedied by the patenting of the Vanier bulb, which still used KOH solution for absorbing $CO_2$, depending for its speed on its design and the use of crushed potassium hydrate as a dryer.

A change in the method of burning the sample also cut down the time of analyses. Heretofore chemists held that the sample must not be burned at a rate fast enough to fuse it or the results would be low. It was then found that correct results could be obtained by fusing the sample thoroughly while burning.

The rate at which oxygen could pass through the absorption bulb was soon shortened by the use of soda lime for absorbing $CO_2$, and the use of $P_2O_5$ as a dryer, several bulbs being put on the market for the use of these absorbents. By their use, the time of combustion has been cut to 6 min. Many chemists also use the Vanier bulb, taking about the same time to complete combustions.

Soda lime, however, possesses only slight absorbing power. It is also ununiform, some lots being worthless. There is also apt to be loss of moisture through the $P_2O_5$ by the formation of channels. An absorbent not possessing these disadvantages was the mixture of NaOH and asbestos, recommended by the research department of Midvale Steel Co. The writers have succeeded in improving this mixture; and with the absorbent used by them now a filled bulb weighing about 80 g. and containing approximately 60 g. of absorbent will absorb from 10 to 15 g. of $CO_2$.

We have also used mixtures of sodium hydrate and other substances and find that they work satisfactorily. It is not necessary to use a dryer with this absorbent, as it also possesses great drying power.

### The Combustion Train Described

Following is a description of the train and method of procedure:

*A* and *B*, aspirator bottles. *B* is filled with oxygen from the oxygen tank, a reducing valve being used. Bottle *A* is graduated for each 250 cc. Samples are burnt with the oxygen from *B* forced out by pressure of water in *A*, the amount of oxygen used being measured by fall of water in *A*. *D* is an empty safety bottle. *E* is one-third full of concentrated $H_2SO_4$. *F* is filled with the same absorbent used in Midvale absorption bulb *M*. *H* is loosely packed asbestos burned for 10 min. in a current of oxygen previous to using. *J* is filled with 80-mesh zinc. *K* contains concentrated $H_2SO_4$. The annexed drawing is drawn to scale with the exception of the glass tubing which is purposely drawn larger.

To fill Midvale bulb *M*, put in first a layer of glass wool (to prevent clogging of outlet tube) then add absorbent till the bottle is filled. The absorbent should be tamped down lightly with a straight piece of wire.

The train being set up and free from leaks, all stop-cocks being open except *L*, *L* is opened sufficiently to allow gas to flow at the rate of 200 cc. to 250 cc. per minute when the bulb *M* is attached. *C* is now closed, all other stop cocks remaining as fixed. The train is now ready to run samples.

A sample of one-half factor weight, properly prepared, being inserted in the furnace, the stop-cock *C* is turned on. If the furnace is at 1800 deg. or over, the sample fine and uncovered, the sample should begin to burn in 20 sec. Burning should take from 40 to 60 sec. additional, consuming 500 cc. of oxygen. Now run in 500 cc. of oxygen to wash out all $CO_2$. The bulb is now ready to weigh.

If the sample is covered by a lid, alundum or otherwise, and the sample is coarse, or if the furnace is below 1800 deg., the combustion may be delayed as much as 2 min. The actual burning will, as before, take from 40 to 60 sec. In any case, 500 cc. of gas must be passed through the apparatus after the steel has ceased burning.

The point at which the burning of the sample begins may be determined by the increased rate at which gas passes through the liquid at *E*, due to the rapid absorption of oxygen by the burning steel. A similar decrease marks the end of the burning period.

### Preparation of Boats

The boats used are unglazed porcelain, filled with 80-mesh alundum till level with the edges. A V-shaped groove, 1 in. long, is made in the alundum, and in this the weighed sample is placed. Alundum boats are satisfactory; but the sample when burning, being in a state of fusion, is apt to run through the powdered alundum and cling to the boat. Porcelain, being non-porous, does not suffer this defect.

The burning sample, if uncovered, will splatter the inside of the combustion tube. This may be cleaned off with an iron rod, without injury to the tube, when the tube is cold. The presence of a heavy coating of iron oxide is apt to crack the tube when the furnace is shut down or started, due to unequal expansion and contraction. The heat of the flying iron, on account of the poor quality of many of the quartz tubes now on the market, is likely to crack the combustion tube while running a sample. For this reason it is necessary to have some method to prevent this coating of oxide.

We now use a cover made from a combustion boat slightly narrower than that in which we burn our sample. The ends are broken off, leaving only the middle. This is inverted and placed over the drillings, the edges of the smaller boat resting inside of the edges of the larger. This arrangement will not jar off, is quickly adjusted, and prevents all injury to the tube. It will slightly delay the burning of the drillings.

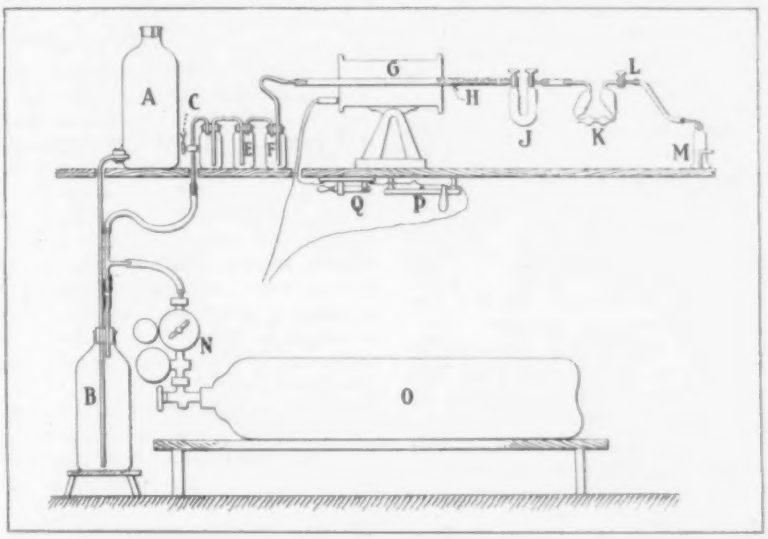
### Standardization of Bulb

The method of filling the bulb has been explained. It will be noted that no dryer has been used, the absorbent being its own dryer. A filled bulb should absorb from 10 to 15 g. of $CO_2$.

A freshly filled bulb should be run on the train for an hour and then weighed. It is not necessary to run the gas at a rapid rate during this time. The bulb is again attached and two more liters of gas are run through at the usual rate. The bulb should show neither gain nor loss. Should it do so, gas must be run through for another period of an hour. The bulb is then checked with 2 liters of gas. It should not, however, be necessary to run the bulb a second time. When the bulb has reached a constant weight, the train is checked by running

a government standard. Our standard calls for 0.393 carbon. Results are accepted from 0.392 to 0.396 per cent. It is our policy to require one standard to be run on each turn. A fresh bulb may show slightly low results on the first three carbons run on it.

It has been the custom of some chemists to omit the asbestos packing or the zinc tube, or both, claiming that they add no accuracy to the result. It has also been their custom to use absorption bulbs, which, while accurate enough at low speeds, function more or less imperfectly when run at the speeds at which they attempt to run them. The high results obtained from the first error, partly neutralize the low results of the second. Whatever accuracy may be claimed for the results, the method of obtaining them hardly merits encouragement. In using our own absorbent, we have found the omission of asbestos or zinc to give high results. We have also found the use of nickel boats to give high results, in spite of the fact that we have oxidized them for many hours previous to using. It is also good policy to burn boats and alundum before using, as a blank will after show two points or more of carbon. The special R. R. alundum with surface alkali removed gives no results on a blank sample.




Arrangement of Apparatus for Making Quick Carbon Determinations by Combustion

Elements difficult to oxidize can be burned by mixing with an equal weight of carbon standard, the amount of carbon in the standard being afterward deducted from the result. We have been enabled in this way to burn many substances usually difficult to oxidize.

There need be no fear of the sample being unsufficiently burned, as the rapid flow of gas thoroughly oxidizes the sample while still in a molten condition, insuring complete combustion of the carbon even in nickel chrome steels. The rapid flow of gas, providing an excess of oxygen even while the steel is burning, prevents any formation of carbon monoxide, making unnecessary the use of a catalyzer to oxide this substance. There can be no less of $CO_2$ through the absorbent, as it does not penetrate, even at extreme speeds, a depth of more than 1¼ in., leaving the lower portion untouched.

A small U tube for zinc is preferable to a larger one. A stop-cock on this tube is also necessary, as the stop-cock connecting with the sulphuric acid bulb should be turned off when the furnace is shut down. Otherwise, due to the cooling of the gases in the combustion tube, sulphuric acid may be drawn over into the zinc.

In the train as described, the writers claim nothing new, with the exception of the absorbent as made and used. Being its own dryer it possesses advantages over absorbents needing extra dryers. It has the same drying power as a freshly filled Vanier sulphuric acid bulb. Having large absorbing powers, a bulb will last several weeks, and once standardized, gives no further trouble. On account of a difference in color between the used and unused portions of the absorbent, it is possible to determine the moment a bulb must be discarded.

Owing to the rapidity with which gas may be safely passed through it, it prevents formation of carbon monoxide, insures complete combustion of all carbon, and allows the accurate combustion of substances otherwise troublesome. It also prevents errors from small leaks.

The simplicity of the method of operating the train, the method of measuring the gas used giving the exact instant the bulb is ready to weigh, makes this train one well fitted for the use of men unskilled in combustion, besides allowing results to be reported in the least possible time.

Absorbents and all other parts of this train are handled by Arthur H. Thomas Co., Philadelphia.

## Monetary Savings Effected by a Soot Cleaner

Approximately 18.3 tons of coal are saved per year by each linear foot of tubing in a permanently installed soot cleaner according to computations made by the Vulcan Soot Cleaner Co., DuBois, Pa. An additional saving of the labor of one man for one day, it is stated, is also possible. In the case of the average water tube boiler which requires about 200 ft. of tubes, the saving in fuel amounts to $14,600 annually, based on a cost of $4 per ton of coal and a labor saving of $400, assuming that boiler room labor can be secured for a daily wage of $2. These figures are based on boilers operated at 140 per cent capacity for 24 hr. for 325 days per year with an average coal consumption of 4 lb. per boiler hp. per hr. The life of the cleaner is assumed to be seven years, which is claimed to be a conservative figure for the cast-iron sheathed element now furnished that was illustrated in THE IRON AGE June 27. An installation of 2688 nozzles of the older unprotected type was made in a large central station five years ago and in that period only about 15 nozzles have had to be replaced on account of failure.

## Appeals for Merchant Marine

WASHINGTON, Aug. 20.—Chairman Edward N. Hurley of the United States Shipping Board, has inaugurated a nation-wide campaign for greater support for the "New American Merchant Marine," which that corporation is building. He promises a fleet of 3000 ships, with a total of 25,000,000 tons; fast passenger and freight liners that will run not only to Europe, but to South America, Asia, Africa and Australia as well.

He has sent a letter to every chamber of commerce and similar commercial or industrial organization throughout the country calling upon all to co-operate in this campaign by the appointment of special committees on merchant marine.

# STEEL OUTPUT LIMITED

## Coal Shortage Serious at By-Product Plants of Some Steel Companies

WASHINGTON, Aug. 20.—Shortage of coal for by-product ovens, particularly in the Chicago territory, is checking the steel output of the country and has resulted in a vigorous appeal for help from the War Industries Board to the United States Fuel Administration. As a result of a conference between Chairman Baruch with Fuel Administrator Garfield, the latter called a conference for today of the fuel administrators of the Northern and Northeastern States, as well as from the coal-producing Southern States, to take drastic steps to meet the situation.

At the same time, the conference was to discuss methods to prevent less essential industries from storing large quantities of coal needed by war industries. So far, however, no charges of deliberate hoarding have been made, and Fuel Administrator Garfield declared that all difficulties have been met by voluntary acquiescence of industries in proposals to share coal they have secured but which has been needed for more important war work by other plants.

The general coal shortage throughout the country continues, and the scarcity of by-product coal has reached a point where one steel mill complained to Chairman Baruch that it was 40,000 tons behind in its output because of this shortage. There have also been complaints that industries which do not require by-product coal have been using it because it was easier to secure than steam coal.

### Substitute Steam Coal

"The only way to meet this," said Fuel Administrator Garfield, after his conference with Chairman Baruch, "is to take the by-product coal away from some of the industries who are now receiving it, and give them steam coal instead. Of course, we will then have to take the steam coal away from some one, but I do not think there will be any serious difficulty in meeting that situation. We shall probably have to move more Indiana and Illinois coal East as well as up the lakes."

So far there has been no suggestion of commandeering coal from any holders, particularly because there has been no difficulty in inducing favored plants to share with less favored ones. Dr. Garfield, however, made it clear that there would be no hesitation to take such steps, should they prove necessary, and that the Government had the authority to do so.

The same situation has arisen in the question of coal storage. One difficulty here has been in the fact that some of the war industries have neglected to accumulate their winter's supply, confiding in the ability of the Fuel Administration and of the War Industries Board to obtain preferential treatment for them at all times to secure whatever coal they may need. On the other hand, less essential industries have taken advantage of this situation to store their full supply, knowing that they could hope for no preference when winter comes.

### Must Share Supply

The Fuel Administration, however, has kept complete record of all of these coal movements, and it is declared there will be no hesitation to make the latter plants share with the war industries, should necessity require such sharing in the winter. The Fuel Administration, however, is at work on a program of restrictions for the storage of coal by the less essential industries, and it is expected that this will help to prevent anything that might be called hoarding.

Evans Woollen, the acting director of the Bureau of State Organizations of the Fuel Administration and Federal Fuel Administrator for Indiana, discussed this question in a conference of county fuel chairmen for New York State last week.

"There is a necessity for a modification of the Fuel Administration's policy in the matter of storage," said Director Woollen. "We are, as you know, well informed about storage by the reports we now have weekly from nearly 100,000 industries, utilities and retailers. From these reports it is evident that storage by non-preferred consumers must be checked. The administration's policy as modified under existing conditions is based on the assumption that the hazards of winter delivery should be borne by the non-preferred consumers. Accordingly, it is being provided that coal in demand for winter storage by preferred consumers shall not be available for such storage by non-preferred consumers. You will find yourselves much engaged during the ensuing weeks in carrying out that policy."

### Production Managers

Further to facilitate the output of coal, the Fuel Administration has appointed 28 production managers, one for each coal production district. Each of these will have charge of the campaign for increased production in his own district and to him the production committees, which are being formed at the great majority of the soft coal mines throughout the United States, will report. Each production committee will consist of six members, three to represent the mine management and three to represent the mine workers. In case a mine has failed to produce the maximum tonnage, it will be up to the production committee to learn the cause or causes of the failure and to place the blame where it belongs, either with the mine management or with the men. Each week the production committee will post a list showing the names of the men who have been absent, or who have worked short hours, or who have loaded less than a fair amount of coal, and the reasons will be given, setting forth clearly, whether, in each particular case, the blame lies with the company or with the worker.

The question of opening new coal mines has been discussed by the fuel administration, but so far it has not looked with particular favor upon these propositions, except where it was found that both transportation and labor would be available for the new mines, without interfering with the output of existing ones. The Government, however, has favored extending existing mines wherever this would result in a corresponding increase of the coal output.

Because of the importance in accelerating the importation of manganese from Brazil, the fuel administration has made no effort so far to interfere with the shipment of low volatile coal to Brazil, although other foreign countries have been compelled to accept steam coal.

### Output Still Decreasing

For the fourth consecutive week, the bituminous coal output of the country has shown a decided decrease. It is now more than 2,000,000 tons a week behind the amount estimated by the Fuel Administration as a summer-month output to equal the country's prospective needs. This is a shortage of more than 15 per cent. The figures for the week ending Aug. 10 represent an output of 12,274,000 net tons (including lignite and coal made into coke). This is a decrease of 278,000 tons or 2.2 per cent from the output of 12,552,000 tons during the preceding week, although it is an increase over the output of 10,636,000 tons during the corresponding week of 1917. The Fuel Administration reports say that an output of 14,500,000 tons per week must be reached during the remainder of the summer months to make up the deficit of the coal year to date.

## Shortage of Coal in Pittsburgh and Near Districts

A very serious shortage of coal in the Pittsburgh, Youngstown and other nearby districts exists at present, and unless soon relieved will greatly cut down output of pig iron, steel and other products in these most important producing centers. In fact, some large manufacturing plants in Pittsburgh and Youngstown already report a decreased output owing to the shortage of coal. The trouble seems to be in the lack of cars to promptly move the coal that is being mined, the coal operators claiming plenty of coal is being turned out, but the producers cannot get enough cars

to move it promptly to consumers. Last week, R. W. Gardiner, production manager of the Pittsburgh district for the Federal Fuel Administration, sent a long telegram to Dr. Harry A. Garfield, United States Fuel Administrator at Washington, stating that scores of coal mines in the Pittsburgh district were idle because of lack of cars to move the coal, and that something should be done at once to relieve the serious situation, that promised to get much worse. A reply came from Administrator Garfield's office that the matter had been brought to the attention of the Railroad Administration, and that everything possible was being done by the railroads to move the coal. At one coal district near Pittsburgh no less than 17 mines were closed for several days last week, as no cars were on hand to move the coal, and none were in sight. It is said that thousands of coal cars in Western Pennsylvania and elsewhere are in the shops being repaired, and that most of these cars will not be ready for duty for some time. The demand for cars for moving extra war industries fuel to the Great Lakes is very heavy, and this is aiding in creating the shortage of cars in the Pittsburgh district and elsewhere.

The situation in the Youngstown, Ohio, district is also bad. Recently the Youngstown Sheet & Tube Co. made a request of the Government that it be allowed to build a stretch of eight miles of railroad in Greene County, Pa., in order to connect up its coal property with trunk line carriers. A favorable answer to this request from the Federal Railroad Administration is expected in a short time. It is said that coal is being piled at the mines of the Youngstown Sheet & Tube Co. in Greene county at the rate of over 100 tons per day, but this condition will be quickly relieved as soon as the concern is able to get the proper carrying facilities. Recently this company started a large number of new by-product coke ovens at Youngstown, but was unable to get the coal from its mines to operate them, and coal was supplied temporarily by the Government. The great shortage in supply exists not only in steam coal, but in coal for by-product coke plants as well.

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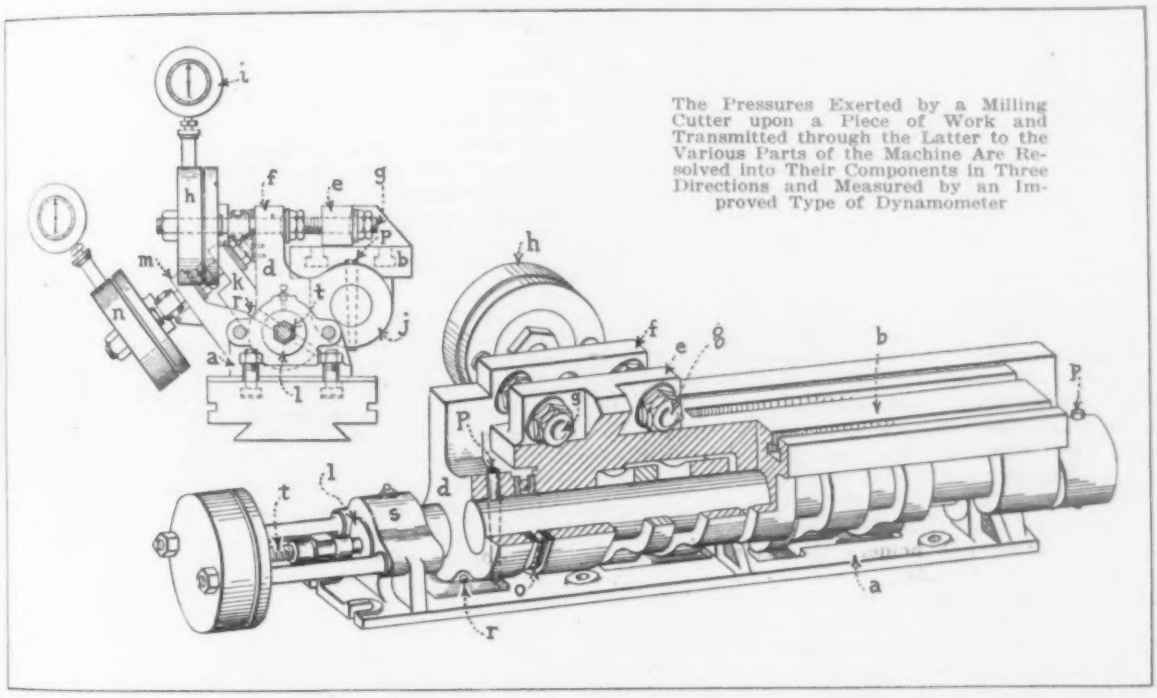
Egle Bros. Mfg. Co., Detroit, Mich., maker of special fire brick and china kilns for the past 30 years, is building an extension, 78 x 163 ft., costing approximately $10,000. Production will be increased by the manufacture of a line of small appliances, large heat treatment furnaces and core ovens. R. D. Hornbrook, formerly of Holcroft & Co., and J. B. Nicholls, formerly of the Standard Fuel Engineering Co., have become associated with this company in an engineering capacity.

## Improved Milling Machine Dynamometer

A dynamometer designed to measure the pressure exerted by milling cutters has been developed by R. Poliakoff, 711 Flatiron Building, New York. Since each of the components into which the pressure is resolved is at right angles to the other two, the instrument gives more information than is available with the ordinary machine-tool dynamometer. Among its applications are the determination of the pressure required for various milling operations and thus assisting in the design of various parts of the machine, analyzing the action of different types of cutters and indicating the relative difficulty of machining various materials.

In operation the instrument is mounted upon the foundation plate *a*, which in turn is bolted to the table of the milling machine and the work to be machined is fastened to the auxiliary table *b* of the dynamometer. The work and the milling cutter are then brought together and the cut started. The resulting pressures exerted through the work upon the auxiliary table *b* are resolved into three components; one of these is at right angles to the center line of the table, another is in the vertical plane, while the direction of the third is parallel with the surface of the table and at right angles to the other two. The degree of pressure in each component direction is registered upon a separate hydraulic gage.




The Pressures Exerted by a Milling Cutter upon a Piece of Work and Transmitted through the Latter to the Various Parts of the Machine Are Resolved into Their Components in Three Directions and Measured by an Improved Type of Dynamometer

The pressure exerted at right angles to the center line of the table *b* tends to rock it in a clockwise direction about the shaft *c* without affecting the carriage. This movement draws the flange *e* away from the flange *f* on the carriage and draws the rods *g* and the gage box *h* which is connected with them, so as to cause the liquid to be driven up into the dial *i* in an amount proportionate to the amount of pressure exerted, the index of the dial being moved to a corresponding extent.

The downward component of the pressure exerted by the cutting tool on the work and through it upon the table causes the latter to descend. This motion depresses the bearings *j* and rocks the plate *k* about the shaft *i*. The movement of this plate away from the plate or arm *m* on the foundation plate *a* causes a compression of the gage box *n*, driving the fluid up into the dial associated with it.

The pressure exerted in a longitudinal direction parallel with the center line of the table *b* shifts the table in this direction, the motion being communicated to the carriage *d*, through the thrust bearing *o* and the pins *p* and *q*. Since the shaft *l* of the carriage *d* is

connected rigidly by the pin *r*, the shaft is shifted in the bearing *s* of the foundation plate. This movement of the shaft pushes the spindle *t* in front of it and forces the liquid in the gage box associated with it to actuate this gage.

## Leather Belting Conditions

The supply of standard weight leather belting (26 lb. to the cut) is ample for present needs notwithstanding the fact that manufacturing is on an abnormally large scale. Extra light and extra heavy leather is hard to get, as it is practically all taken by the Government for war purposes, light weights going into puttees, for example, and the extra heavy into stirrup straps, etc. The large supply of leather in this country is due to the fact that beeves are skinned in this country rather than shipped abroad on the hoof as in normal times. As regards importation, the South American supply is practically cut off, due to lack of shipping. This source of hides is of no value for belting, however, as the beeves are stripped in that country right out on the prairie and left to be gathered up. Weathering results with loss of tensile strength, it is stated, ruining it so far as power transmission purposes are concerned. Loss of this source of supply is nevertheless having some effect on the supply of hides.

The Government about two months ago set a price of 26c. per lb. on hides and this has tended to stabilize prices which at that time were mounting to 30c. and would probably have gone higher. On large lots, i. e., orders amounting to from $5,000 to $100,000, the following discounts from the standard list for leather belting adopted in 1906 are in force:

Extra heavy first quality (16 to 18 oz., in singles, center cuts).....30 and 5 per cent
Regular weights (14 to 15 oz., in singles, center cuts).....40 per cent
Second grade leathers are 10 per cent cheaper.

No drop in leather belting prices is expected to follow the aforementioned Government regulation for some time, as belting now on the market is the product of supplies bought previous to that time.

## Priority Agents Unnecessary

WASHINGTON, Aug. 20.—The War Industries Board has approved a notice "to the public" issued by Edwin B. Parker, priorities commissioner of the board, pointing out to manufacturers and others dealing with the board, the uselessness and inadvisability of employing agents to obtain priority certificates or preference treatment from the board. The notice says: "The employment of agents not only burdens the applicant for priority with a wholly unnecessary expense, but an attempt on the part of such agents to exert personal influence—which it is needless to say they do not possess—may have a tendency to prejudice the applicant's cause."

## Lake Ore Movement

The receipts of iron ore at Lake Erie ports for the month of July amounted to 8,311,629 tons, compared with 7,678,805 tons in July, 1917. The receipts for the season to Aug. 1 amounted to 21,896,414 tons compared with 19,338,853 tons for the same period in 1917. The shipments to furnaces in July amounted to 5,781,766 tons, compared with 5,146,355 tons in July, 1917. The shipments for the season to Aug. 1 amounted to 18,398,695 tons, compared with 16,747,034 tons in the previous year. The balance on dock Aug. 1, 1918, was 7,228,721 tons, compared with 5,719,481 tons a year ago.

The Vesper Brick & Tile Co., Vesper, Wis., is contemplating the establishment of an industry for the manufacture of coke from peat, which is present in abundance in the vicinity of its present plant. The new industry is to be capitalized at $500,000.

# MACHINISTS NEEDED

## Boilermakers Also in Demand—Shortage in Some Kinds of Employment Relieved

WASHINGTON, Aug. 20.—The curtailment of non-war production has begun to lighten the general labor situation, according to reports made to the Department of Labor. This is true particularly in certain skilled trades. So far, however, no section of the country has returned any noticeable surplus of machinists, boilermakers or molders. The dangerous shortage in these trades, in important industrial sections, says the Department of Labor announcement, can only be relieved by transfers from local non-war industries.

In the meantime blanket prohibition against advertising for unskilled labor by war employers with a force of more than 100 men has been modified by the department's employment service. To facilitate supplying unskilled workers for important Government projects, the Federal directors of the service in 22 States have been authorized, for the time being, to insert in newspapers, in behalf of firms authorized to recruit labor in their States and which will pay for them, advertisements beginning in the following form: "United States Employment Service needs unskilled laborers for (name of firm)——."

The advertisements should state the nature and location of the work, but must not mention wages. Men must be asked in the advertisements to apply at a United States Employment Service office. The Federal directors of these States also are instructed to give all possible latitude, consistent with protection of other war industries, including agriculture, to the field recruiting forces of the concerns authorized to use them and to use the field forces of the United States Employment Service to the utmost to alleviate the shortage in the great war projects.

The States in which this modified advertising will be permitted are: Alabama, Arkansas, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Massachusetts, Minnesota, Mississippi, Missouri, Nebraska, New York, North Carolina, Ohio, Oklahoma, South Carolina and Texas.

To work out a better co-operation between employers and employees on Government contracts, Frank T. Hawley, head of the Industrial Plants Division of the Department of Labor, is sending letters to Government contractors directing them to have shop committees selected by the factory management and the workers in all plants. This is the first step in a nation-wide organization of employers and employees for increased production in all lines of war work.

The United States Aircraft Production Service has issued a special badge for all employees of factories or offices working on aircraft. It is estimated that more than 40,000 of these badges will be distributed. They are in the form of a button or pin, and bear as insignia a target in red, white and blue, such as appears on each airplane wing. The target, a pair of wings and the letters "U. S." support ribbons bearing the words "Aircraft Industrial Service, Army and Navy."

## Safety Convention at St. Louis

The program for the convention of the National Safety Council to be held at St. Louis Sept. 15 to 21 inclusive, indicates that discussions regarding safety work in the metal working industries, particularly iron and steel, will be prominent. The convention was originally scheduled for Sept. 30-Oct. 5, but at the request of officials of the Treasury Department the dates were advanced two weeks so as not to interfere with the fourth Liberty loan campaign.

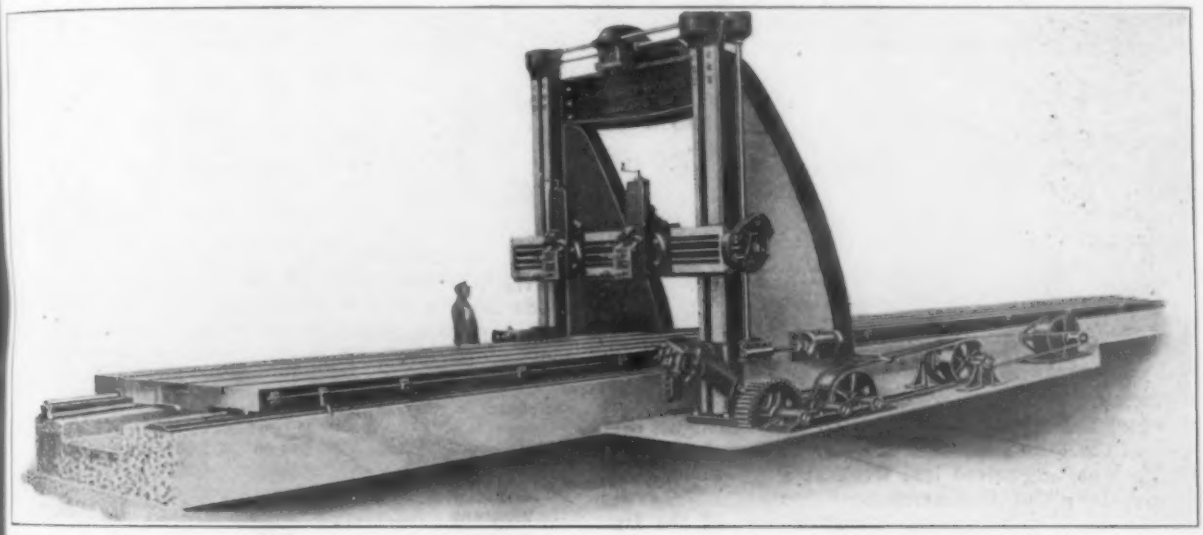
The new 500-ton blast furnace being built by the Brier Hill Steel Co., Youngstown, Ohio, will be ready for blast about Sept. 15, and two new plate mills about a month later. Work on the blast furnace and plate mills has been greatly delayed because of the scarcity of labor and materials.

## New Storage Battery Locomotive Crane

A new type of storage battery locomotive crane has recently been designed and built by the Atlas Car & Mfg. Co., Cleveland, for handling shells at the Naval Ammunition Depot, St. Juliens Creek, Va. The selection of a storage battery crane for this work was presumably due to safety considerations since it eliminates the possibility of dangers that might result from the use of a steam operated crane or one supplied with electrical current from a trolley. This crane is of unusually large size to be operated with a storage battery. It has a capacity of 5000 lb. at a 15-ft. radius, and is designed to carry a load of that size without outriggers or rail clamps. It has a fixed boom arranged to lift from 8 ft. below to 8 ft. above the top of the rail. In operation it is generally similar to a standard locomotive crane and travels on a standard gage track. The frame is supported on four 24-in. chilled cast-iron wheels, the axles being of forged steel. It is driven by a single 25-hp. Westinghouse mill type motor.

The crane is capable of hoisting, rotating and moving along the track, and can perform any combination of the three motions at the same time. The clutches are arranged so that the machine may travel either way or turn in either direction regardless of the direction of rotation of the motor. The hoisting mechanism is provided with a safety lowering brake of the ratchet and pawl type which the operator must disengage before the load can be lowered. The rotating bed is an iron casting on which is mounted the motor operating mechanism and battery, the latter being at the side opposite the boom so that it acts as a counterweight. The lever that controls the rotating motor operates in connection with two friction clutches and a train of bevel gears so that rotation in either direction may be obtained regardless of other operations. The hoisting drum is connected to the motor by a train of gears having a 15 to 1 reduction and the hoisting operation is controlled by a friction clutch. The wheels are driven by bevel gearing which in turn is connected to the motor through bevel gearing and a vertical shaft.

The storage battery consists of 100 cells of Ironclad battery mounted in trays of seven cells each. The crane is 12 ft. in length over the end sills, 8 ft. wide and 15 ft. in height overall, and weighs 38,000 lb. Its hoisting speed with a full load is 60 ft. per min., its rotating speed 5 r.p.m. and its propelling speed 2 miles per hr.



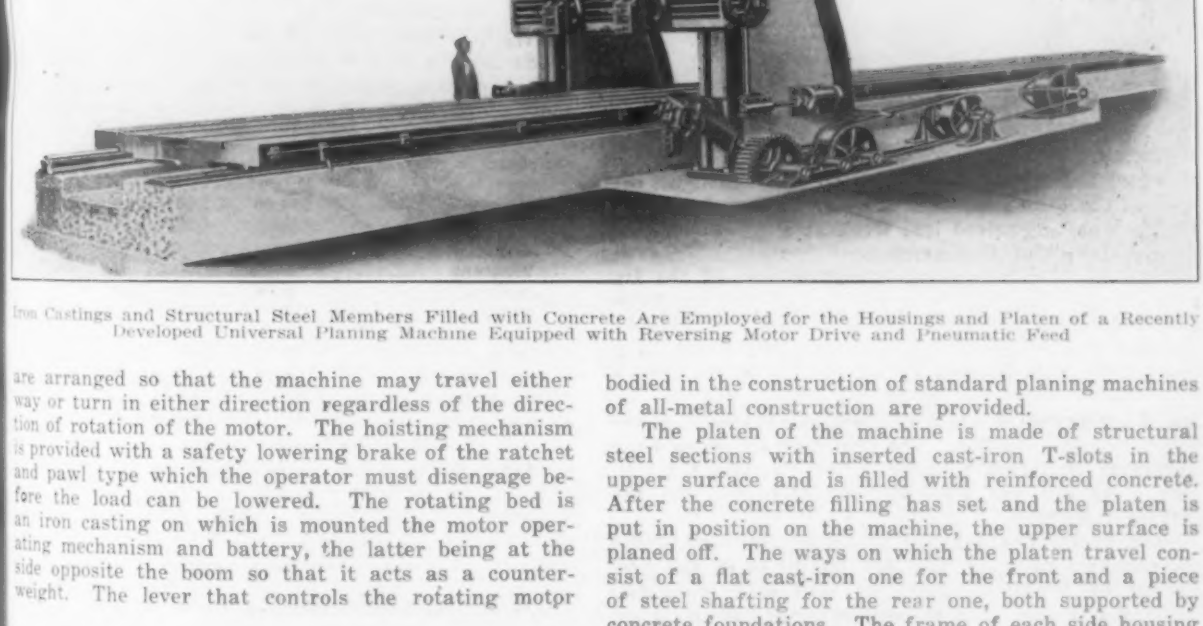
A Load of 5000 Lb. Can Be Handled Without Outriggers or Rail Clamps by a New Storage Battery Locomotive Crane That Is Capable of Any Combination of Hoisting, Rotating or Traveling Simultaneously.

## Large Metal-Concrete Planing Machine

A line of large metal planing machines in the construction of which concrete plays an important part has been developed by David A. Wright, 568 Washington Boulevard, Chicago. The machines are built in sizes ranging from 6 to 20 ft. with any length of bed, and it is pointed out that all of the features embodied in the construction of standard planing machines of all-metal construction are provided.

The platen of the machine is made of structural steel sections with inserted cast-iron T-slots in the upper surface and is filled with reinforced concrete. After the concrete filling has set and the platen is put in position on the machine, the upper surface is planed off. The ways on which the platen travel consist of a flat cast-iron one for the front and a piece of steel shafting for the rear one, both supported by concrete foundations. The frame of each side housing consists of three castings for the front, back and base respectively. After these have been finished and assembled, concrete is poured in to provide rigidity.

The machines are driven by three individual motors or with one of the reversing type and a pneumatic feed forms part of the equipment.



Iron Castings and Structural Steel Members Filled with Concrete Are Employed for the Housings and Platen of a Recently Developed Universal Planing Machine Equipped with Reversing Motor Drive and Pneumatic Feed

Two world's records were broken last week by the Ecorse plant of the Great Lakes Engineering Works with the acceptance by the United States Government of the 3,500 steel freighter, "Crawl Keys." The first was the launching of the boat in 14 working days of eight hours each, and the second was the delivery of the vessel to the Government in exactly 29 days from the date building was begun. The closest approach to the mark set by the Great Lakes Engineering Works is held by the Union plant of the Bethlehem Shipbuilding Corporation, which launched the 12,000-ton ship, "Invincible," in 23 days and 23 hours from the laying of the keel.

## Scarcity of Trained Engineers Deters Safety Progress

Apathy to the safety movement among engineers in general and a lamentable scarcity of trained safety engineers technically fitted to carry forward the work are the greatest obstacles to the elimination of accident hazards in industries, according to a paper presented before the American Society of Mechanical Engineers at its spring meeting in Worcester, Mass., June 4, by L. A. De Blois, Wilmington, Del., safety engineer, E. I. du Pont de Nemours & Co. Neither the nature of an industry nor the character of the materials handled, even though these be explosives, ammunition and strong acids, such as, he said, are handled by the du Pont company without any considerable difference in accident rates from those of so-called non-hazardous industries, he declared, has as much effect on the cause, frequency and severity of accidents as the safe design and equipment of plants, the provision of a proper organization and the constant supervision and education of the working force into habits of caution and careful practices. Yet technically trained and experienced men who are capable of studying an industry from all its angles and of making constructive recommendations for changes in design and operation which strike to the root of the accident evil are lacking, while, on the other hand, well paying positions are open in the Government arsenals, Navy yards and Emergency Fleet Corporation, as well as in the larger industries.

Analysis of industrial accidents, he said, show that from 15 to 25 per cent are unavoidable, 10 to 20 per cent are caused by unsafe mechanical or structural conditions and, in his opinion, are therefore possible of correction, and 80 to 90 per cent are attributable to human defects.

## Michigan Manufacturers Organize

DETROIT, Aug. 19.—The stamping and forging section and the casting section of the first Michigan district of the War Resources Committee, War Industries Board, were organized last week at a meeting in the Detroit Board of Commerce.

Carl H. L. Flintermann, vice-president of the Detroit Pressed Steel Co., Detroit, was elected chairman of the stamping section and he appointed C. A. Sattley, General Metals Co., Detroit, sub-chairman of the forging section, and William G. Harry, Harry Bros. Mfg. Co., Detroit, chairman of the light stamping section. Mr. Flintermann himself will act as chairman of the heavy stamping section. The chairman of the castings section is W. Bruce Howard, Atlas Foundry Co., Detroit. He has not appointed sub-chairman for the casting industries.

The entire organization is being perfected under the direction of M. J. Murphy, chairman of the first district of Michigan, including Wayne, Monroe and Oakland counties. Similar organization for the other industries in the district and for the entire State, which comprises division eight of the resources and conversion section of the War Industries Board, will be perfected as rapidly as possible, under the direction of Advisor A. A. Templeton of the War Industries Board and president of the Detroit Seamless Steel Tubes Co., Detroit.

As soon as the industries of the State are organized a survey of all plant equipment and facilities will be made, preliminary to possible conversion to war work. The War Industries Board has already placed contracts through division office, as a result of the information obtained.

The H. Koppers Co., Pittsburgh, will add 55 Koppers by-product coke ovens to the present plant of the Seaboard By-product Coke Co., on the Hackensack River, near Seaboard, N. J., an allied interest. When these are completed, the plant will contain 165 Koppers ovens with a capacity for turning out about 2100 tons of by-product coke per day.

## Annual Meeting of Association of Iron and Steel Electrical Engineers

The twelfth annual convention of the Association of Iron and Steel Electrical Engineers will be held in the Southern Hotel, Baltimore, on Sept. 11, 12 and 13.

At the Wednesday afternoon session, Sept. 11, a paper is to be read on "Automatic Engine Stops" by Walter Greenwood, safety engineer, Ohio Works, Carnegie Steel Co., Youngstown, Ohio, and reports are to be submitted by the safety committee on "Rules for the Safe Operation of Electric Cranes" and by the educational committee on "Methods of Education for Electrical Employees of Iron and Steel Mills."

At the Thursday morning session a paper is to be read by R. H. McLain on "Bridge-Motors for Overhead Traveling Cranes," and by D. D. Pendleton, Wheeler Condenser & Engineering Co., Pittsburgh, on "Condensers and Condenser Engineering Practice." At the afternoon session papers are to be presented by K. A. Pauly, General Electric Co., Schenectady, N. Y., on "Standardization of Ratings of Large Rolling Mill Motors," and J. T. Sturtevant on "Electrically Driven Mills."

On Friday morning papers are scheduled from W. T. Snyder, National Tube Co., McKeesport, on "Remote Controlled Sub-Station," and by the standardization committee.

A banquet is to be held on Thursday evening, Sept. 12, and Friday afternoon is reserved for an inspection trip of the plant of the Bethlehem Steel Co. at Sparrows Point, Md.

## Rates on Manganese Ore

WASHINGTON, Aug. 20.—Director General of Railroads McAdoo has ordered a general reduction in the rates on manganese ore. The new carload rates, per ton of 2,000 lb., with a minimum carload weight of 60,000 lb., follow:

| From Stations in | Group D (*a*) | Group 2 (*b*) | Group B and C (*c*) | Group A (*d*) |
|---|---|---|---|---|
| Oregon | $11.00 | $12.50 | $12.50 | $13.50 |
| Washington | 11.00 | 12.50 | 12.50 | 13.50 |
| California | 11.00 | 12.00 | 12.50 | 13.50 |
| Montana | 8.00 | 9.50 | 9.50 | 10.50 |
| Arizona | 9.00 | 9.00 | 10.50 | 11.50 |
| Colorado | 7.00 | 7.00 | 8.50 | 9.50 |
| Nevada | 10.00 | 11.00 | 11.50 | 12.50 |
| Utah | 9.00 | 10.00 | 10.50 | 11.50 |
| New Mexico | 7.00 | 7.00 | 8.50 | 9.50 |

(*a*) Group D—Chicago, Indiana Harbor and Erie.
(*b*) Group 2—Points in Alabama and Tennessee taking Group C. rates.
(*c*) Group B and C—Youngstown, Pittsburgh, Buffalo and points in Ohio.
(*d*) Group A—Points in seaboard territory, including Goshen, Graham, Reusens and Roanoke, Va.

## Special Chain Developed for Pipe Hanging

A chain designed for the sole purpose of hanging pipe has been brought out by the Cleveland Galvanizing Works Co., East Cooper Avenue and Pennsylvania Railroad, Cleveland. It is made from cold drawn steel wire and the links are formed with a special tie that, it is emphasized, cannot pull out. The chain which is used in conjunction with screw eyes to support the pipe comes in reels from which the desired lengths can be cut as required, thus reducing waste. Among the advantages claimed for the use of chain as a means for supporting pipe are the ease of adjusting the level of the pipe, the ability to pass chain around obstructions that might interfere with the ordinary type of hanger and a flexibility which permits horizontal adjustment of the pipe line without changing the length of the chain or shifting the location of the screw eye.

The largest truck train movement yet undertaken by Uncle Sam recently reached a successful ending at Camp Jesup, Ga., when 90 3-ton Packard trucks completed a 981-mile cross-country journey from Detroit.

# LARGE MACHINE TOOL NEEDS

## Government Approves Plans for Equipment for Gun Relining Plant

Announcement is made by the Ordnance Department of the approval of plans for the manufacture of the machine-tool equipment which the United States will install in the new gun relining plant to be built in France, as reported in THE IRON AGE last week.

Owing to the tremendous heat generated by these guns when fired, their accuracy can not be assured after a few hundred shots unless they are relined. It was necessary, therefore, to establish a relining plant in France where this work could be done.

The project for this relining plant is one of the largest undertakings by the Ordnance Department and will call for the expenditure before completion of from $25,000,000 to $30,000,000. The plant will be comparable in size with the Krupp gun works at Essen, Germany.

The machine tools alone required for this project will cost between $15,000,000 and $20,000,000 and embrace some 218 units, including gun-boring lathes, engine lathes, rifling machines and grinders.

Included among the facilities required for the manufacture of these tools, was a planer of unprecedented length, 500 ft., to cost $450,000. The largest planer previously built was 186 ft. in length. The 500-ft. planer extends over such a length of ground that in order to insure its perfect alignment a correction had to be made in the design to take care of the curvature of the earth. The outstanding feature in the construction of these planers is the use of reinforced concrete for the bed plates. This results not only in a very material reduction in the time required to build the all-important item, but also reduces the cost and saves iron for other war industries. Likewise, the expansion and contraction, due to temperature changes, of an amount of metal represented by a wrought iron bed plate of these dimensions would seriously affect the alignment of the planer.

In addition to the machine tool requirements there will be needed extensive shrinkage pits for heating the gun jackets in order to remove the old liners and insert the new ones; a full equipment of 240-ton traveling cranes; a steam-electric generating plant of approximately 5000 kilowatts capacity with its complement of boilers, pumps and other accessories; and the electric motors for driving the machines.

There will also be required extensive housing facilities for the equipment and the personnel to operate it.

The Ordnance Department has completed the engineering work on this whole project in less than 30 days from its inception. In that time the project has been reviewed and approved by the Chief of Ordnance, passed by the Clearance Committee of the War Industries Board, negotiations concluded with machine-tool builders, and procurement orders issued for the production of the tools required. Under ordinary conditions, the engineering work on a project of this magnitude would have required over four months.

The forgings for the reliners are obtained from the very best grade of crucible steel. They are heated, and forged, and turned to approximate dimensions over here, and sent to France, and will be turned to the proper dimensions in the plant "over there."

The relining of the big guns is one of the biggest parts of the war program which calls for delivery of these tools to the relining plant within a very short time, so that they may be used in relining the guns now in use by the American forces.

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The division of engineering, United States Employment Service, in the last month received 468 applications for help from employers; 1314 applications for help from workers; referred out 1063 applications, and actually located 483. The privileges of the division are open, free of charge, to engineers and technical men. The local branch of the United States Employment Service will take care of applications.

# STATUS OF SELLING AGENCIES

## The Question Involved in Federal Buying for Railroads

The question of commissions on Government contracts is widely discussed in machinery and supply trades. The Washington article in THE IRON AGE of July 25, pages 200 and 201, and the editorial in the issue of Aug. 15, page 401, on the "Function of Machine-Tool Dealers," dealt with phases of the question affecting many readers of this paper. The Railway Business Association through its secretary, Frank W. Noxon, 30 Church Street, New York, has sent the following letter to its members under the title "Selling Agencies":

"We are informed that the Federal Department of Justice and the division of finance and purchases of the Railroad Administration has under consideration the question whether established and legitimate selling agencies shall be exempt from the contract provision intended to prohibit agencies organized for the purpose of exacting a special profit. Members of the Railway Business Association who petition for relief from the effects of the proposed contract clause are of two classes: (1) selling agencies; (2) makers who employ selling agencies.

"The evidence which will best aid the Attorney General and the director of purchases in a wise and just determination is a description of the types of selling agencies which claim to be legitimate, with emphasis upon the points which distinguish those types from the class of agencies which the Government seeks to stop. The most effective form in which such evidence can be presented to the Government is letters from agents or principals, each telling his story in his own way. You are invited to write such a letter. It is suggested that replies be prompt.

"The Attorney General rests his recommendation upon decisions of the Supreme Court which have pronounced unenforceable and illegal contracts for contingent fees in connection with furnishing supplies to the Government, on the ground that they are contrary to public policy by reason of the tendency to which they give rise. The recommendation of the Attorney General was that contracts made by any department of the Government contain a clause by which the contractor warrants that he has employed no third person to obtain the contract upon contingent compensation or paid no brokerage, commission or percentage upon the amount receivable; breach of the warranty to constitute cause for annulment of the contract. Some of the railroad regional purchasing committees have issued the Attorney General's recommendation as a guide to railroad purchasing officers.

"The Railway Business Association has addressed a letter to the Attorney General calling his attention to the various types of selling agencies whose legitimacy has never been questioned, the theory being that a maker might as properly employ an agency as an individual salesman to market his goods. This letter makes the suggestion that a speedy understanding of the Government's precise purpose would be of substantial benefit since those engaged in conducting sales companies doubt whether under the recommended covenant they may do any more business, while makers, if agencies are prohibited, must develop other sales mechanism. Supplementing this formal communication by informal inquiries we receive the impression that established agencies were not within the scope intended and that information in the form of facts will be useful.

"Your situation, if you acquaint us with it, will be laid before the authorities at an early moment."

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The State Industrial Board, Pennsylvania, has handed down a decision holding that women over 18 years of age may operate traveling cranes in industrial establishments in the State, with provision, however, that each case of such operation must have the approval of the board.

# Secretary McAdoo's Plan Is Adopted

## Both War Profits and Excess Profits Tax Included in New Revenue Bill, but Details Have Not Been Agreed Upon—The Secretary's Statement

WASHINGTON, Aug. 20.—The new revenue bill as nearly completed by the Ways and Means Committee represents a notable victory for Secretary of the Treasury McAdoo, who has caused to be written into it both an excess profits tax and a war profits tax on corporations, which are required to pay the tax producing the greater revenue. The excess profits tax has not been fully worked out, but as at present provided in the bill grants a specific exemption of $3,000 plus 8 per cent of the invested capital and levies a tax of 40 per cent on all excess profits between 8 per cent and 20 per cent and a tax of 60 per cent on all such profits exceeding 20 per cent. The war profits tax has been written into the bill at the flat rate of 80 per cent, the deduction for pre-war earnings being 8 per cent for financial and transportation corporations, 10 per cent for manufacturing, farming and general business, and 12 per cent for mining and kindred hazardous enterprises. The Treasury Department estimates that 90 per cent of the business corporations will be called upon to pay the war profits tax, while the remainder will pay the excess profits tax, the two taxes bringing in an aggregate of approximately $3,000,000,000.

The action of the Ways and Means Committee followed the presentation of a formal statement by Secretary McAdoo in which he analyzed the taxation of corporations under both the excess profits and war profits plans and submitted some highly interesting figures showing the payments that would be made by certain groups of corporations in the iron and steel industry and in coal mining. In view of the fact that the secretary's figures were taken from the internal revenue returns which, presumably, are confidential, the identity of the various corporations is more or less concealed under general groupings, but the figures are none the less interesting both to manufacturers and investors.

### Secretary McAdoo's Statement

"The distinction between a war profits tax and an excess profits tax," the secretary says, "is not a matter of form, but of substance. By a war profits tax we mean a tax upon profits in excess of those realized before the war. By an excess profits tax we mean a tax upon profits in excess of a given return upon capital. The theory of a war profits tax is to tax profits due to the war. The theory of an excess profits tax is to tax profits over and above a given return on capital. A war profits tax finds its sanction in the conviction of all patriotic men of whatever economic or political school, that no one should profit largely by the war. The excess profits tax must rest upon the wholly indefensible notion that it is a function of taxation to bring all profits down to one level with relation to the amount of capital invested, and to deprive industry, foresight and sagacity of their fruits. The excess profits tax exempts capital and burdens brains, ability and energy. The excess profits tax falls less heavily on big business than on small business, because big business is generally over-capitalized and small businesses are often under-capitalized.

"The war profits tax would tax all war profits at one high rate; the excess profits tax does, and for safety must, tax all excess profits at lower and graduated rates. Any graduated tax upon corporations is indefensible in theory, for corporations are only aggregations of individuals, and by such a tax the numerous small stockholders of a great corporation may be taxed at a higher rate than the very wealthy large stockholders of a relatively smaller corporation. The object of a graduated tax should be to make taxes fall upon the rich, who are best able to pay them. The graduated excess profits tax disregards this, and often produces the reverse result.

### Additional Sources of Income

"But, though these great defects in the excess profits tax lead me very strongly to recommend that you should seek additional sources of taxation in the war profits tax and not in an increase of the excess profits tax, I have from the beginning favored the continuance of the existing excess profits tax with the inequalities and injustices remedied, because this is not a time when the treasury can afford to dispense with any existing source of revenue. Rather, it is my duty to point out to you additional sources of taxation.

"As I have already indicated, I am opposed to increasing the excess profits tax. This does not mean that I think the existing excess profits tax cannot be improved. On the contrary, I have indicated from the beginning, and repeatedly, that I think it can and should be improved.

"If, as I now understand, you contemplate an increase in the exemption, then there must also be an increase in some of the excess profits tax rates to make the tax produce an equal amount of revenue. Similarly, if, as seems probable, additions to invested capital made during the past year will result in a reduction of the revenue produced by the excess profits tax under the existing rates, modifications must be made on that account.

"My thought has been not that the existing rate or law should be regarded as sacrosanct, but that the existing law should receive modification, not from the point of view of producing additional revenue from the excess profits tax, but from the point of view of producing the same revenue and with a reduced and not increased injustice and inequality.

"I have read in the newspapers, with a good deal of surprise, the intimation that the plan of the Treasury Department was calculated to produce less rather than more revenue, and to relieve certain large corporations from taxation.

### Comparison of Profits

"I should like to make a part of the record a memorandum which Dr. Adams of the Treasury Department has prepared for me, showing a comparison of the war profits and excess profits taxes as applied to 22 selected corporations, including the corporations which have been named in the newspapers as most likely to benefit by the omission to increase the excess profits tax.

"I shall state now only his general conclusions:

"'1. Twenty-two horrible examples—selected deliberately to ascertain the worst the war profits tax and the best the excess profits tax can do—yield just four cases in which the excess profits tax would be as productive as the war profits tax.

"'2. Eleven corporations, including (a company) and some of the worst of the other horrible examples get no benefit from the war profits deduction, while they would pay the 80 per cent rate which is an integral part of the war profits tax.

"'3. Contrasting the 60 per cent with the 80 per cent bracket in the two proposed new excess profits taxes, it appears that in only one case . . . would the change from the 80 per cent to the 60 per cent bracket affect the tax. Of course the totals show a higher amount of the excess profits tax with an extreme bracket of 80 per cent, but in only one case where the corporation pays excess profits rather than war profits tax, would the substitution of a 60 per cent for an 80 per cent bracket affect the tax.'

"When I speak of the increased excess profits tax

under consideration by your committee, I mean the so-called 30-50-80 per cent plan without the 10 per cent minimum."

All of the steel companies, Mr. McAdoo asserts, will pay far greater taxes under the war profits method than under the excess profits plan, and in this connection he submits the following specific data:

"From A company the war profits method will, it is estimated, produce nearly $100,000,000 more than the excess profits tax, even at the increased rates proposed by your committee.

"From B company $9,000,000 more, and from C company $4,500,000 more. D company would, it is estimated, pay $100,000 more under the war profits tax methods than under the excess profits tax method at the increased rate proposed by your committee.

"E company would pay $3,400,000 more, F company $9,200,000 more, G company $2,300,000 more, H company $150,000 more, I company $1,300,000 more, and J company $1,900,000 more under the war profits tax than the excess profits tax. K company would have no excess profits tax to pay under the increased rates proposed by your committee, although it did have to pay $275,000 excess profits tax under the existing excess profits tax law.

"L company would have to pay more than $4,000,000 more under the war profits tax than under the increased excess profits tax which has been proposed by your committee.

"M company would have to pay $750,000 more, N company $900,000 more, O company $400,000 more, P company $1,100,000 more, and Q company $1,200,000 more, under the war profits tax than under the increased excess profits tax.

"Among the conspicuous companies, certain of the R group, the S company and the T company are the only ones which our researches indicate as benefiting by the omission to increase the excess profits tax.

"The S company under the existing law would pay about $3,452,000 and under the increased rates proposed by the committee would have to pay $4,369,000, an increase of about $900,000.

"The T company under the existing law would have to pay $1,296,000, an increase of about $400,000."

### Applying War Profits Tax

As illustrating the effect of applying the 80 per cent war profits tax and the various excess profits taxes heretofore proposed, Mr. McAdoo submits a statement showing what would happen if these various taxes were levied upon a composite group of "R" companies, as follows:

*A composite "R" group*

| | | |
|---|---|---|
| Invested capital for taxable year | | $623,705,538 |
| Invested capital for pre-war period | | 362,713,982 |
| Net income for taxable year | | 204,755,823 |
| War profits deduction: | | |
| Specific | $ 3,000 | |
| Net income for pre-war period | 53,516,727 | |
| 10 per cent of changes in capital | 26,104,734 | |
| 10 per cent of invested capital for taxable year | | 79,624,461 |
| A. War excess profits tax | | 100,105,089 |
| B. Excess profits tax under the act of Oct. 3, 1917 | | 42,586,014 |
| C. Excess profits tax as proposed in section 301 | | 73,358,666 |
| D. Same as "C" except change in rate. | | 63,595,568 |

Mr. McAdoo also submitted a table which he brought to the attention of the committee as a "conclusive and controlling argument" against the increased excess profits taxes originally proposed by Chairman Kitchin and his colleagues. Concerning this table, Mr. McAdoo said:

"The highest rates are paid by the smallest companies. The 80 per cent rate, which the committee proposed to apply as a maximum excess profits tax rate, will not be paid by more than one, if by one, great corporation in the United States.

"To impose a tax some hundreds of thousands of dollars greater upon the S company your rates would burden unduly, even to the point of ruin, innumerable small business concerns.

"Remember that the excess profits tax you impose depends not upon the income of the corporation, but upon the relation between the income of the corporation and its invested capital arbitrarily ascertained and that by so much as you increase the gradation of the tax, you multiply the burden of the errors incident to such ascertainment.

"It is from the lower brackets that the revenue is produced. It is from the upper brackets that the hardship and inequality result."

### An Interesting Exhibit

An interesting exhibit was also submitted by Secretary McAdoo showing that of the larger coal companies with alleged capital ranging from $2,000,000 to $120,000,000, the W-1 company pays no excess profits tax; the W-2 company pays 37 per cent of its income in excess profits taxes; the W-3 company pays 7 per cent; the W-4 company, 36 per cent; the W-5 company, 27 per cent; and the W-6 company 5 per cent. On the other hand, of a group of six small coal companies whose capital ranges from $4,000 to $97,000, all pay excess profits taxes in amounts ranging from 52 per cent to 56 per cent of their entire income.

"This comparison of the large coal companies with the small coal companies," Secretary McAdoo said, "is a conspicuous example of the discrimination of the excess profits tax law against the small concern and in favor of the big concern. I hope we shall get, by the war profits tax, greater and more equal taxes from all those who have profited in coal."

The table referred to by Mr. McAdoo is as follows:

| | Invested capital taxable year | Net income for taxable year | Excess profits tax | Ratio of tax to income |
|---|---|---|---|---|
| Larger Companies: | | | | |
| (W-1) | $ 30,864,696 | $ 2,154,233 | No tax | 0.0 per cent |
| (W-2) | 10,200,747 | 5,564,657 | $2,114,104 | 37.98 " |
| (W-3) | 120,785,010 | 13,685,997 | 1,005,739 | 7 " |
| (W 4) | 6,608,168 | 3,154,491 | 1,125,547 | 36 " |
| (W-5) | 2,250,959 | 813,838 | 226,591 | 27.84 " |
| (W-6) | 9,625,189 | 1,280,478 | 66,742 | 5.57 " |
| Smaller Companies: | | | | |
| (W-7) | 29,824 | 54,148 | 28,324 | 52.31 " |
| (W-8) | 6,553 | 29,039 | 15,309 | 52.69 " |
| (W-9) | 4,692 | 35,978 | 19,562 | 54.37 " |
| (W-10) | 14,287 | 63,301 | 35,345 | 55.87 " |
| (W 11) | 97,137 | 186,720 | 99,970 | 53.54 " |
| (W-12) | 65,514 | 211,833 | 18,833 | 56.03 " |

In conclusion, Secretary McAdoo emphasized the argument that there should be a war profits tax at a flat rate of 80 per cent and that the excess profits tax should not be depended upon to produce increased revenue, but that modifications are desirable to reduce the inequalities of the present law.

The House bill makes very heavy increases in individual income taxes. Beginning with the first $4000 of taxable income the normal rate will be 5 per cent, while incomes above $4000 will pay 10 per cent. Surtaxes will begin at $5000 and will be graduated upward as follows: $5000 to $7500, 3 per cent; $7500 to $10,000, 6 per cent; $10,000 to $15,000, 10 per cent; $15,000 to $20,000, 15 per cent; $20,000 to $30,000, 20 per cent; $30,000 to $40,000, 25 per cent; $40,000 to $50,000, 30 per cent; $50,000 to $60,000, 40 per cent; $60,000 to $70,000, 45 per cent; $70,000 to $80,000, 47 per cent; $80,000 to $90,000, 48 per cent; $90,000 to $100,000, 49 per cent; $100,000 to $200,000, 50 per cent; $200,000 to $300,000, 55 per cent; $300,000 to $500,000, 60 per cent; $500,000 to $1,000,000, 65 per cent; and $1,000,000 to $5,000,000, 75 per cent.

A differential of 3 per cent has been adopted for the normal tax on so-called unearned incomes—those derived from investments of all kinds—making the normal rate thereon 13 per cent instead of 10 per cent.

W. L. C.

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It is announced by the Federal Machinery Sales Co., Chicago, that it has secured the representation of Henry & Wright Mfg. Co., Hartford, Conn., manufacturer of drilling machines.

ESTABLISHED 1855

# THE IRON AGE

*EDITORS:*

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## Trade Restrictions After War

The Congress of Vienna should be a solemn and emphatic warning against the United States failing to prepare for the commercial portion of the peace settlement. This country is fighting for two things—to end this war and to prevent war in future. Efficient work in either direction cannot be done without a clear definition of our attitude and an agreement with our Allies. We are far from either at present. The United States has never subscribed to the Paris Economic Agreement. We have willingly placed the lives of our men in charge of General Foch, having indeed urged the arrangement, but in matters of commerce we have done nothing. If constructive efforts on a commensurate scale are not undertaken soon, we shall be open to invidious comparison as to what we are willing to do with our sons' lives and what we are willing to do with our commerce.

Since our platform is that we purpose crushing the military power of Germany and not her trade power, the matter of commerce after the war is clearly one for the peace settlement. We were sadly unprepared for war, and we should not be similarly unprepared for peace. Time was afforded for the former, but will not be afforded for the latter. The peace conference will of necessity make peace with the Central Powers, and it would be the saddest miscarriage in all history if it did not at the same time spell peace and the closest friendship between all the powers now arrayed on the Allied side.

That there is no well defined scheme, apart from the Paris Economic Agreement, for us to subscribe to or demand a modification of, is one of the most cogent arguments that we should at once address ourselves with the utmost seriousness to the full consideration of this question. The statesmen of the Entente, after all this time, have not come into accord, which proves the greatness of the difficulties in the way of complete harmony.

The Government has wisely and happily entered into partnership with the commercial interests of the country for the better prosecution of the war. It needs their counsels just as much in developing an attitude as to the commercial aspects of the peace settlement. It is perfectly clear that these commercial aspects will prove very important, if indeed they do not overshadow all other matters, including even the geography of the settlement. More than that, the matter of trade conditions after the war affect in large measure the very duration of the war. With one set of trade conditions prescribed, Germany will be willing to settle at one time. With another set of conditions, the war will have to be continued for a longer period. Neither has the Government called upon commercial interests for their counsel, nor are commercial interests making any serious efforts to prepare themselves to give such counsel. It would appear even that the progress of British thought in this matter is being given but scant attention.

It may be that the discussions that have been had abroad and the tentative conclusions reached in them have been misread and need a clarifying mind to elucidate them, but it does appear on the surface that the fundamental basis upon which the structure of trade rules is to built, the formula for developing what shall occur in commercial regulations, has not been defined. First of all the object or purpose must be defined and adopted as a working rule not to be departed from. These regulations must be for one, two or all of the following purposes: To punish Germany for crimes unspeakable, crimes for which former Ambassador Gerard has solemnly urged that men in Germany should be hung at the end of the war; to minimize the possibilities of the recurrence of war; to recompense those who have been compelled to fight Germany, for the immense loss of life and property this war causes. Action along these three lines is not necessarily compatible. To an extent the emphasizing of one would tend to embarrass consideration of another.

For united action by the countries opposed to Germany, including not only the United States but our Latin-American Allies, who thus far have had no part in considering these matters, the first essential is a clear definition of the precise purpose for which trade regulation or restriction is to be adopted. The platform must first be constructed, the formula written. Such a declaration can of course come from no one but the President. When the rules have been laid down, the details can be discussed and in this discussion the business men

of the United States should have an important voice. Meanwhile they should be preparing themselves to give counsel.

## Military and Industrial Service

Invidious comparisons have been made between the enthusiasm of the man under the colors and the man in the workshop. The services of each are equally necessary to win the war, it is urged, but it may well be asked if any one has ventured to deny so obvious a proposition.

In the loose talk so often indulged in, a class distinction is made. The man under the colors is enthusiastic. The industrial worker is not. Two classes are made, the one being generally commended, the other frequently condemned. By far the major portion of the men under the colors were drafted. It was through no act of theirs that they became placed where they are; nor was it as a rule any act of the industrial workers that left them where they are. The draft law enacted by Congress and the interpretation of that law by the Provost Marshal created these two classes.

Military service furnishes its own inspiration. It is in the uniform, the music, the maneuvers, all that goes with military operations. All have reflected upon the nondescript appearance of the bodies of draftees that have walked, or slouched, through the streets to entrain and have thought how different those men would be in a few months, even a few weeks. There is an official film labeled "Remaking a Nation" which would have been much better named "The Production of Soldiers," for that is what it is. It visualizes a long and complicated process, developed by years of experience.

Where is the film, where is the activity, "The Making of Industrial Workers," the industrial soldier? Something has been done, but no more than enough to constitute a confession that the activity is needed. Fancy the making of soldiers by the preaching of sermons, the distribution of leaflets, the signing of pledges and the wearing of buttons. Surely less would be accomplished in the making of soldiers by such means than has actually been accomplished in the making of enthusiastic and faithful industrial workers by these means.

It is true, of course, that much more training is needed to make a good soldier than to make a good workman, for the soldier has to be taught his trade and the workman already knows his. That is not the point. The objectionable comparisons are not that the soldier is better at keeping step than the machinist is at handling his calipers. The comparisons are of the spirit, the enthusiasm, exhibited by the two classes, constituted through no acts of their own but by the procedure of the Government.

The soldier does not wash dishes with enthusiasm, nor is he usually elated by the sound of reveille. Accounts indicate that many a soldier is a chronic grouch, except when occasion arises for him to take a chance on being killed, when he is in his element. There is the enthusiasm produced by training, by surroundings, by the atmosphere; but if one seeks the enthusiasm that is produced by vision he should go rather to the shipyard workers who have been making new records in the driving of rivets, or to the tin mill workers who sweltered through July and produced a record tonnage of tin plate for a summer month.

There should be no remitting in the efforts of employers from president to foreman to create the atmosphere, to visualize the help in winning the war that earnest and enthusiastic industrial service renders. There cannot be too many buttons or badges or certificates, provided always that they are never cheapened by being given when not deserved. There cannot be too many speeches or meetings if they are properly conducted, or too many pledges sought if there is prospect that they will be kept. How many employers have gone into their shops in the night to express appreciation of the way in which product is put through in the trying hours between midnight and daylight? How many have taken a leaf from the book of Schwab and sought to encourage maximum effort by saying in so many words that the man who is doing his best day's work in the mill or the shop counts just as much and is as much entitled to recognition as the man who goes over to France to fight? When employers work as hard and as intelligently and systematically as do the officers in the training camps, they may find they have neither time nor occasion to complain of lack of results.

## Idleness of Injured Workers

The sooner the average workman resumes employment following injury by accident the better it is for him, his dependents and his employer. This maxim has been accepted by owners who have put it to practical test. The reason is not one of dollars and cents for the employer. In a majority of cases there is no saving as between what would be paid a man in compensation had he remained idle during his full period of recovery and what, in the same period, he receives in wages beyond his actual earning capacity. In fact, there may be an increased direct cost where the employee is put early to work. The owner's return lies chiefly in the worker getting back his old producing capacity, or the maximum capacity which his injuries have left to him, much more quickly if he is employed than if he waits until he is pronounced completely well. He has less time for worry, and worry is always a drag in the return journey to physical fitness. Many men have no intellectual resources, no wholesome way of occupying a protracted time of idleness, and for that reason any tendency to dissipation is liable to assert itself.

The task which the temporarily crippled employee can undertake to advantage cannot always be found, it is true. But under conditions as they are to-day it often happens that the services even of a man with one arm in a sling, as a messenger or guardian of a door or in other simple labor, from which he may release some able-bodied person, constitute a genuine production gain. In other cases the worker's arms and hands are whole, but he is unable to move about, and for such there are jobs which require a sitting

position. Opportunities are more numerous than are apparent at first thought.

In attempting this system a wholly necessary adjunct is team work between the company physician and the heads of departments. The doctor takes a natural interest in his patient, and superintendents and foremen are seldom slow in extending help to a worthy employee. This is true at all times, busy or dull. At present the incentive is greater, because a worker, if he has any skill at all, is looked after from motives of economy as well as of philanthropy.

Naturally there can be no coercion in inducing the injured workman to resume his labor. He has the right to remain idle, receiving the compensation determined by law, until his injuries are healed. It has been found, however, that coercion is not necessary, or at least very seldom. The suggestion by the doctor of the possibility of returning to work is gladly accepted. Most men dislike idleness above all things.

As for the financial side of the system, let us assume that a man returns to his shop a fortnight after the accident, and some weeks earlier than could be required of him. His compensation stops automatically, unless he has lost a member—a hand or finger, leg or eye or toe. But the law provides that he shall receive in addition to his new wage a given per cent of the difference between such wage and his average earnings preceding the accident which caused his injury. If the man had averaged $18 a week and was given work at $12 a week, and if the compensation law of his State fixed the usual two-thirds as the measure of his share of the difference between the old and new wage, he would receive $12 plus $4, or $16 a week, which is more than he would receive in compensation were he idle. Should his injury include the loss of a member his compensation measured in weeks, the number depending upon the degree of loss, would be his any way. In any case the worker is vastly better off working than idling.

## The Colleges and the War

A special committee on higher education and industry, appointed by Secretary Lane of the Department of the Interior, has rendered a public service very opportunely in the report just published declaring that the engineering problems confronting the United States are far greater than those of any other of the great nations, and that the loss by our Allies of men of highly specialized training in the early days of the war places upon this nation a greater duty of meeting the demand for well educated men. After pointing out how the War Department has taken steps through the establishment of the student army training corps to utilize the higher educational institutions in training young men under 21, the committee declares that the people of the United States should recognize that the maintenance of the war strength of the nation in its full power demands the utmost efforts of all existing well-organized and adequately equipped colleges, universities and technical schools. The committee believes that young people having the requisite qualifications should heed this urgent call of their country and apply themselves diligently, enthusiastically and in increasing numbers to the task of preparing for the highest service for which they are capable.

This call to duty comes at a time when the colleges of the country are about to reopen their doors after the summer vacation and many young men are hesitating as to whether they will resume their studies or try to get into some branch of war service. The ambition to go to France and participate in the exciting events at the front is, of course, natural for every red-blooded young man; but that there are duties lying close at hand, demanding the best effort of the young men of the country, is certain. It would be easier for many to go to France and expose themselves to all the dangers of battle than to stay at home and discharge the less spectacular but no less important duties that confront them. The colleges are doing their part splendidly in providing many courses of study in science, engineering and arts, and also in giving opportunities for military training. If the young men will avail themselves of the opportunities which are presented, and will work quietly and faithfully at home until called by their country for other duties, the army of trained men which the nation will have in readiness will be a tremendous asset.

Secretary Baker's statement to the House Committee on Military Affairs indicates that intensive training will probably be given to only a few men and that all students physically fit are likely to be called upon for military service before next June, but his advice to young men who have a chance to go to college is to do so. If they would serve their own best interests as well as those of their country, they will take his advice.

## Clarifying Signatures

Rear Admiral Wood, commanding the Boston naval district, has issued an order that whenever an officer has to sign an official document his name must first be typewritten and then written with his own hand beneath the printed characters. The admiral's reason is that he "has found it difficult to decipher the written signatures of many officers."

In business correspondence the blind signature has always been a source of annoyance and at times, of complications. The usual rule is to type the initials of the writer's name in a lower corner of the final page, while the written signature is in full. Few persons realize that their signatures are difficult to decipher, and usually they attribute failure to read the name to carelessness or inexperience or stupidity. A man whose ordinary handwriting is perfectly clear may evolve a signature which can only be guessed at by those who are unfamiliar with it, making it impossible to address a reply properly. Admiral Wood's rule of the typed name would eliminate an annoyance which is the more irritating because it is so wholly unnecessary.

In connection with the proposal to post on the doors of the courthouses of the country the names of all income taxpayers, it is stated that in the whole State of Alabama, only 40 farmers pleaded guilty to returnable incomes. The 40, as well as

all other farmers who buy agricultural implements, hope to get the benefit of a reduction of $5 per ton in the price of steel bars sold to implement makers, but their joy over this action may be short lived, for now comes the word from Washington that even the kind-hearted Administration, which favored that reduction, will not approve an advance in the price of wheat. Pity the poor farmer!

## Basic Steel from Scotch Works

WASHINGTON, Aug. 20.—The war has made an important change in the Scottish steel industry, according to the report of Consul Rufus Fleming at Edinburgh, issued by the Department of Commerce. "Hitherto," he reports, "most of the Scottish works devoted themselves to the production of steel by what is known as the acid process. To produce this quality of steel a considerable proportion of Cumberland or Spanish ores were necessary. These, however, were no longer available in sufficient quantity, and a number of the blast furnaces were converted to the production of basic steel—making iron from purely Scottish ores." Concerning the effect of government control, he says:

For the iron and steel making industries 1917 was a period of activity unparalleled in their history. Throughout the year every establishment was working up to its limit and at the same time was undergoing constant enlargement and expansion as quickly as the work could be done. As a result the output was beyond all previous records. War work in its various phases had, of course, first call on the output. All iron and steel was under strict government control, and no material could be disposed of for any purpose whatever without the sanction of the district superintendents empowered to deal with the matter. War requirements were fully met, and fair quantities were available for other purposes. In the main, however, all work of an ordinary kind for which urgency could not be shown had to lie in abeyance. Makers had on their books orders for thousands of tons which could not be executed. Home prices for steel at the end of the year were: Angles, $83.34 per gross ton; ship plates, $55.95; bars and ties, $59; boiler plates, $60.83. Export prices were quoted about $12.17 per ton higher. Home prices of malleable bar iron were fixed, but export prices were uncontrolled and rose by nearly $9.50 in the course of the year, the December quotation for standard bars being about $80.30 per ton, f. o. b.

## Proposed Woodward Steel Plant

BIRMINGHAM, ALA., Aug. 20.—A. H. Woodward, chairman of the board of the Woodward Iron Co., says no details of the proposed steel works at the Woodward plant, in this district, have been worked out, and that five to six weeks will be required to do so. He hopes to have Frank Crockard, former vice-president and general manager of the Tennessee Coal, Iron & Railroad Co., and later president of the Nova Scotia Steel & Coal Co., associated with the Woodward company. Mr. Crockard will be here this week. The Woodward plant's proximity to the navigable Warrior River has been urged as a consideration in favor of the location. Mr. Woodward regards the steel works as practically assured, but no contract with the Government has been made.

The Whiting Foundry Equipment Co., Harvey, Ill., which acquired the foundry of the Calumet Foundry Equipment Co. some years ago, has recently sold this foundry and the sale has led many to believe that the Whiting Foundry Equipment Co. has sold its entire plant. The Whiting Company operated the Calumet foundry as a separate plant and its sale does not in any way affect the conduct of its manufacturing business.

The Navy Department has issued a circular urging all bureaus, as well as contractors, to expedite railroad shipments intended for the department, to prevent freight congestions during the fall and winter months.

## CONTENTS


Modern Practice in Galvanizing Sheets ..... 433
Anti-Strike Amendment to Draft Law ..... 436
New Shell Turning and Boring Lathes ..... 437
Meeting of Motor Truck Owners ..... 437
Urges Definite Declaration of Labor Policy ..... 438
Machine for Milling Scarfs in Plates ..... 439
Babbitt and Babbitted Bearings ..... 440
Hot Blast Furnace Slag Makes Good Fill ..... 440
Bethlehem Ore Bridge Built in 65 Days ..... 441
Combustion Train for Carbon Determination ..... 443
Steel Output Limited by Coal Shortage ..... 446
Improved Milling Machine Dynamometer ..... 447
Leather Belting Conditions ..... 448
Large Machine Tool Needs ..... 451
Status of Selling Agencies ..... 451
Secretary McAdoo's Taxation Plan is Adopted ..... 452
Editorials ..... 454-457
Government Commission Order Changed ..... 458
Iron and Steel Markets ..... 460
An Asbestos Mixture for Foundry Molds ..... 471
Iron and Industrial Stocks ..... 471
Bethlehem Steel Activities ..... 472
Book Reviews ..... 472
Prices Finished Iron and Steel, f. o. b. Pittsburgh ..... 473
Metal Markets ..... 474
Electric Furnaces and the Electrodes ..... 475
Steel for Vehicles in Class C ..... 475
Personal ..... 476
Electrostatic Flue Dust Precipitation ..... 477
Regulation of Prices of Crude Oil ..... 479
Obituary ..... 480
No New Patterns of Refrigerators ..... 480
Machinery Markets and News of the Works ..... 482


## "The Iron Age" and Its Readers

On no question have more inquiries come to the editors of THE IRON AGE in the past three weeks than that involved in the Washington order requiring firms making sales to the Government to certify that they have paid no commissions to secure the business. A flood of correspondence poured in on the various departments at Washington following this order. Hundreds of firms in metal-working lines had selling arrangements which called for the payment of commissions. These firms were greatly embarrassed by the sweeping character of the orginal order. On another page our Washington correspondent tells how the President and the Attorney General have met the situation in part. The War Department has made a statement explaining that it is not the intention to interfere with any long standing selling arrangements. It will be found on page 458.

The distinction between the right of workers to organize and the right of union agitators to disorganize war industries is clearly drawn in a notable letter of Walter Drew, counsel of the National Erectors' Association, to the National War Labor Board published in this issue. Mr. Drew calls for definite declaration of policy on the part of the board.

The framing of the new war revenue bill, which is expected to raise a tremendous amount of money, is progressing at Washington and an account of the important part which Secretary McAdoo is taking is an interesting feature of the developments detailed in our Washington correspondence.

# Government Commission Order Changed

## Long-Standing Arrangements with Selling Firms Will Not Be Disturbed—Official Statement of War Department

WASHINGTON, Aug. 20.—As foreshadowed in this correspondence in THE IRON AGE of July 25, pages 200 and 201, the Government officials have found it necessary to modify the hard and fast restrictions imposed on contractors through the insertion in contracts of a covenant to the effect that no commission has been paid to third parties to obtain the business. The concession now made is believed to be merely a forerunner of other modifications, in view of the fact that it is now frankly stated that the President and the Secretary of War do not propose that the objectionable covenant "shall be used in such a way as to be harmful to long-established business customs or to curtail industry."

The Attorney General, nearly two months ago, forwarded a circular letter to all of the executive departments suggesting that there be incorporated in all contracts a provision under which the contractors would certify that no commissions have been paid to any one to procure the contract. The covenant suggested by the Attorney General read as follows:

> The contractor expressly warrants that he has employed no third person to solicit or obtain this contract in his behalf, or to cause or procure the same to be obtained upon compensation in any way contingent, in whole or in part, upon such procurement; and that he has not paid or promised or agreed to pay, to any third person, in consideration of such procurement, or in compensation for services in connection therewith, any brokerage, commission or percentage upon the amount receivable by him thereunder; and that he has not, in estimating the contract price demanded by him, included any sum by reason of such brokerage, commission or percentage; and that all moneys payable to him hereunder are free from obligation to any other person for services rendered in the procurement of this contract. He further agrees that any breach of this warranty shall constitute adequate cause for the annulment of this contract by the United States, and that the United States may retain to its own use from any sums due or to become due thereunder an amount equal to any brokerage, commission, or percentage so paid.

### Long Standing Commission Arrangements

It is obvious that the literal enforcement of this provision, which all the departments letting contracts for war material were prompt to adopt, would be subversive of the entire system now prevailing in the sales departments of the leading manufacturing concerns of the country. As has heretofore been pointed out in this correspondence, the great bulk of the business solicited by large manufacturers through their sales agents is handled on a commission basis, sometimes coupled with a salary, retainer or guaranty that the commissions shall reach a certain minimum, it having been found impracticable to handle sales on a straight salary basis. The hardships that would result from an arbitrary forcing to a salary basis the sales departments of all concerns doing a large amount of business with the Government is emphasized by the fact that thousands of important manufacturers are now devoting 25 to 100 per cent of their facilities to war work.

It has only required a brief experience to demonstrate to the Government that business customs of long standing cannot advantageously be modified by arbitrary regulation, and it is significant that the first discovery made is that the new covenant is working to the distinct disadvantage of the Government, in that it reduces competition and places beyond the reach of the Government's buying agencies large quantities of material which are under the control of so-called "third parties," namely, commission merchants, jobbers, selling agents, exclusive and otherwise, and parties who have come into possession of merchandise in an unusual but entirely legitimate manner. With a view to correcting this unfortunate situation and of indicating the general line of concessions which the Government now expects to make with reference to the use of the Attorney General's covenant, the War Department has promulgated the following official statement:

### Where Exceptions Will Be Made

The President has agreed with the Secretary of War that the covenant to be inserted in all war-supply contracts against the operation of contract brokers and other illegitimate business agents, *shall not be used in such a way as to be harmful to long-established business customs or to curtail industry.*

In accordance with this agreement the General Staff has ruled that exceptions to the covenant will be allowed only in classes of cases first authorized by the Superior Board of Contract Review after finding that the best interests of the Government require such exceptions.

The first ruling of the board covers manufacturers of cotton, woollen and worsted and silk textile industries. The board has decided that there shall be added to the covenant a clause which shall exempt the manufacturer who handles his products through a selling agency or agencies which have handled such products prior to and since April 1, 1917.

Manufacturers and dealers who have the required supplies in stock may make contracts with the supply bureaus. Exceptions to this rule will be allowed only in classes of cases first authorized by the Board of Contract Review of the supply bureau affected after finding that the best interests of the Government require such exceptions. The rulings of these boards are subject to the authority of the superior board.

It will be noted that the spirit of this ruling will allow dealers who have the required supplies in stock to make contracts with the supply bureaus, and that exceptions to this rule may be allowed by the Board of Contract Review of the supply bureau affected after finding that the best interests of the Government require such exceptions. Obviously this opens the door widely to legitimate selling agents, although closing it against all speculators. In classifying the methods heretofore employed in the negotiation of contracts for war material the correspondent of THE IRON AGE, in a previous letter on this subject, grouped them roughly as follows:

1. The responsible executives of the manufacturing companies negotiate the contracts by personal visits to Washington and conferences with the purchasing bureaus, or through correspondence.

2. Members of the regular sales organization of the manufacturing concerns procure the contracts for their companies by visits to Washington, the salesmen being compensated by salary or commission, or both.

3. Concerns maintaining offices in Washington, managed by salesmen more or less expert in their respective industries, negotiate contracts through such representatives, who are paid salaries or commissions, or both.

4. General manufacturers' agents, who frequently control exclusive selling agencies for several different concerns, at the same time handling more or less transient business for many other concerns, procure contracts for their principals, their compensation being almost invariably on the commission basis.

5. More or less irresponsible individuals maintaining offices in Washington, and advised of the needs of the Government through channels available to any enterprising person, solicit bids for manufacturers upon more or less un-

founded claims as to their own ability to procure contracts, and in some cases succeed in doing so, usually as a result of the recognition by the Government of the reputation of the manufacturers and the quality of their goods, and never through the utilization of any so-called "pull" claimed to be exerted by the agents in question.

### Most Existing Arrangements Will Continue

It is believed that the spirit of the new regulation modifying the Attorney General's covenant will permit the Government's buying agencies to do business with all those classes included in the first four groups, although in certain instances it may be necessary to obtain specific rulings excepting from the covenant agents embraced in groups 3 and 4.

Of course, no one is interested in relieving the irresponsible individuals in group 5 from the full force of the Attorney General's covenant, as it is manifestly in the interest of legitimate manufacturers and dealers that this class should be entirely cut off from Government business. In the great majority of cases they obtain orders by false pretenses, and their connection with a contract is apt to result sooner or later to the disadvantage of the manufacturer or dealer furnishing the goods.

It is a significant fact that the Washington representatives of many large manufacturing concerns included in group 3 of the category set forth above are continuing to do business as before, and it is understood that in the majority of cases it has not been found necessary to change existing methods of compensation. In many cases these Washington representatives are engineers, or experts of high professional standing, and the departments of the Government with which they have carried on negotiations in the past would regard it as little short of a calamity if they were deprived of their counsel and co-operation in meeting the Government's requirements.

## CORRESPONDENCE

### To All Users of Fuel Oil

*To the Editor:* The Bureau of Oil Conservation, of the United States Fuel Administration, wishes to impress upon all users of fuel oil the importance of taking immediate steps to prevent unnecessary and avoidable waste of fuel oil. It is necessary to conserve fuel.

Attention is called to the following suggestions on handling and burning fuel oil:

When unloading tank cars use great precaution to prevent the loss of oil when uncoupling the discharge pipe or hose.

Stop all leaks in oil pipe lines, fittings, valves, and storage tanks, and see that all tank openings are kept closed. Storage tanks should be equipped with steam-heating coils.

Install efficient burners. Home-made burners are usually crude and consume an excess of oil.

Install strainers. Dirty oil clogs the burner, slows-up heating operations and increases fuel consumption.

Install duplicate pumping systems, and pump the oil to the burners under a uniform and constant pressure.

Install suitable preheaters, in order to obtain proper atomization, clean combustion, and prevent the formation of carbon. This is especially necessary with heavier gravity oils.

Use pyrometers in all heating and heat-treating furnaces. The operator may have good eyesight, but he cannot always judge heat by color. If there is a higher temperature than necessary, fuel is being wasted.

Impress upon furnace operators the necessity of conserving fuel by keeping their furnaces and equipment in the best condition possible, in order to obtain the maximum of economical efficiency.

Install oil meters, thus to keep a record of daily consumption and compare it with previous data and note the decrease in the amount used.

Have sufficient oil storage capacity, to avoid shut down because of delayed shipments. Shut-downs mean a loss of heat and added fuel consumption.

Operate furnaces 24 hr. a day when possible.

W. CHAMPLIN ROBINSON,
Director of Oil Conservation, Oil Division United States Fuel Administration.
Washington, Aug. 6.

### Breakage of Crankshafts

The breaking of the crankshaft in the gas engine is a more common occurrence than is generally supposed; it is generally a break that can only be repaired by supplying a new shaft.

One is not far from wrong in saying that in 70 per cent of the cases of broken cranks the break shows that at least a portion of the shaft diameter had been parted for some time; in other words, the separated points indicate an old break for from one-half to two-thirds the diameter of the shaft or less. Only the remainder of the diameter shows a fresh break. The parts showing an old break often have the appearance of never having been united. With this condition of affairs an owner of a shaft is apparently justified in laying claim to a defect.

#### Causes of Breaks

His claim should receive every consideration that justice and fairness demands, but the real condition that leads up to and causes the break should not be lost sight of; in the large majority of cases broken shafts are the result of loose journal boxes. It is not an uncommon thing to see an engine in operation that shows the crank shaft jumping on one or both journal boxes at each impulse the piston receives.

It is a matter that may have been noticed by the operator and lightly regarded; in his opinion it is only a trivial matter. Oftentimes this loose condition of the boxes entirely escapes the notice of the operator. The sudden force applied to the piston of the gas engine, and through it and the connecting rod to the crankshaft, tends to lift the shaft out of its journal box bed at each impulse, even with the weight of the heavy flywheels crowding it constantly downward into its bed. As soon as the force of the impulse subsides, the weight of the wheels and shaft bring it down into its bed again with a thump.

There is an unintentional and undue strain on the shaft every time it jumps in the boxes, this continual heavy strain at regular intervals soon causes what has been called a crystallized condition of the metal in that part of the shaft where the greater strain occurs. At this fragile point a crack is started and the crack grows deeper, until finally the good metal remaining is no longer able to withstand the strain and breaks in two.

E. STANDIFORD.

### Large Blowing Engine Contracts

The Mesta Machine Co., Pittsburgh, has received a contract from the Pittsburgh Crucible Steel Co., Midland, Pa., an interest of the Crucible Steel Co. of America, for one 42 and 84 x 84 x 60-in. horizontal cross compound blowing engine to drive the new 550-ton blast furnace, which the company is building at Midland. Also a contract from the Weirton Steel Co., formerly known as the Phillips Sheet & Tin Plate Co., for two 34 and 72 x 84 x 60-in. horizontal blowing engines for the new 550-ton blast furnace which this company is building at Weirton, W. Va., and a contract from the Struthers Furnace Co., Cleveland, for a 44 and 84 x 60-in. vertical engine for its blast furnace at Struthers, Ohio. All these are high speed engines, equipped with Mesta plate valves, Iverson patent.

The Tyndel-Morris Co., Eddystone, Pa., has completed and placed in operation a new open-hearth steel furnace.

# Iron and Steel Markets

## STEEL TRADE MEETINGS

### Important Conferences to Be Held in Washington and New York

#### Pressure of War Requirements Increasing, But Output Is Held Down

The meeting of the special sub-committee of steel manufacturers with Government representatives at Washington on Thursday, Aug. 22, and the calling of a general meeting of steel manufacturers in New York for the following Wednesday point to the taking of new and important steps to meet the demand for ship, munitions and railroad steel.

Coal and coke supply still limit pig iron and steel output. The continuance of an adequate labor supply under the new call for fighting men is a serious problem, and even more grave is the situation caused by the set purpose of labor leaders to bring about union control of the steel industry.

Washington is not so much concerned about the construction of new iron and steel capacity, which would be from 12 to 18 months in the building, as about getting the full fighting effect of existing plant. It is certain, therefore, that in the remainder of the year the changes in metal-working industries due to concentration on war work will be more marked than in the past six months.

The situation as to coal and coke and transportation does not measure up to the enlarged requirements of the war. With an average of 360 blast furnaces operating last month, the pig iron output was 110,000 tons a day. With an average of 335 furnaces operating in April, May and June of last year (25 less than in July, this year) the pig iron output for those three months also averaged 110,000 tons a day. Thus 25 more furnaces are required now to keep output up to the rate of last year.

The pig iron shortage complained of for months grows more acute; but the proposal from Washington that the few remaining cold furnaces be started up will come to little. Operators of some of the small furnaces now blowing, particularly in the South, threaten to put them out if the pig iron price is not advanced by October.

Pig iron allocations in the week have been relatively small. Pending demand includes a round lot wanted for the first 500,000 semi-steel shells to be made for the Government.

Scrap shortage conspires with pig iron scarcity to hold down steel output. If existing capacity could be properly fed with raw materials, steel ingot production could be increased by three or four million tons a year.

The unusual pressure for production is shown in the placing with wire makers of a good percentage of the 82-mm. rounds wanted for shells to be shipped this month to France. Putting the lighter billet mills of these plants on munition steel will mean for the time being a very limited output of wire as the rate for months has been only about 60 per cent of normal.

For our forces in France 20,000 more cars have been bought. In bridge and building structural work, July bookings were about 210,000 tons or over twice the average of the first six months of the year; but fully two-thirds of the amount represents accumulations of fabricated ship work which has now been entered. Since August, 1917, an average of 127,000 tons of fabricated steel, including shipbuilding, has been done per month.

The B-4 priority rating for jobbers' purchases, with ten priorities ahead of it, makes for slow replacement of the monthly disbursements to directly essential and preferential classes of war work. An effort is now being made to get a higher priority position, on the ground that otherwise the emergency service of the distributer will become negligible.

Machine tool dealers likewise are pressing for a better rating than B-4 on their record in speeding ship and munition work.

The large number of new hulls now in the water without engines or boilers makes the increase of capacity to build such equipment of paramount importance.

Not less surprising than the fact of an inquiry for 10,000 tons of rounds, from ½ in. to 3 in. for Siberia is the report that priority for this steel is practically assured. The use to which it will be put is purely conjectural.

It is understood that of the country's exports of steel for commercial as distinguished from war purposes, in the first six months of the year, a considerably smaller percentage was contributed by the Steel Corporation than in the first half of 1917. The falling off was due to the large percentage of the corporation's output which has gone to the Government and its Allies.

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## Pittsburgh

PITTSBURGH, Aug. 20.—The cool weather of the past week has again put output of pig iron, steel and finished back to about normal, and for this the trade is very grateful. The loss of a single ton of output of steel at this time of the greatest need for it ever known is a matter for sincere regret. The meeting of the special committee of steel manufacturers with J. L. Replogle, Director of Steel Supply, to be held in Washington this week, is regarded by the trade here as being most important, and the action to be taken will be awaited with the greatest interest. The supply of steel that is now going to some lines of manufacture may be further curtailed or entirely cut off. With the country facing a great shortage in supply of steel for war purposes, further drastic action by the War Industries Board as regards its distribution may come as a result of this meeting.

# A Comparison of Prices

## Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous

### For Early Delivery

| | Aug. 20 1918 | Aug. 13 1918 | July 23 1918 | Aug. 22 1917 |
|---|---|---|---|---|
| **Pig Iron,** Per Gross Ton: | | | | |
| No. 2 N. Philadelphia | $34.40 | $34.40 | $34.40 | $53.00 |
| No. 2 Valley furnace | 33.00 | 33.00 | 33.00 | 53.00 |
| No. 2 Southern Cincinnati | 36.60 | 36.60 | 36.60 | 49.90 |
| No. 2, Birmingham, Ala. | 33.00 | 33.00 | 33.00 | 47.00 |
| No. 2 furnace, Chicago* | 33.00 | 33.00 | 33.00 | 55.00 |
| Basic, deliv., eastern Pa. | 32.90 | 32.90 | 32.90 | 50.00 |
| Basic, Valley furnace | 32.00 | 32.00 | 32.00 | 52.00 |
| Bessemer, Pittsburgh | 36.60 | 36.60 | 36.60 | 53.95 |
| Malleable Bess., Chicago* | 33.50 | 33.50 | 33.50 | 55.00 |
| Malleable, Valley | 33.50 | 33.50 | 33.50 | 53.00 |
| Gray forge, Pittsburgh | 33.40 | 33.40 | 33.40 | 46.95 |
| L. S. charcoal, Chicago | 37.85 | 37.85 | 37.85 | 58.00 |
| **Rails, Billets, Etc.,** Per Gross Ton: | | | | |
| Bess. rails, heavy, at mill | 55.00 | 55.00 | 55.00 | 38.00 |
| O.-h. rails, heavy, at mill | 57.00 | 57.00 | 57.00 | 40.00 |
| Bess. billets, Pittsburgh | 47.50 | 47.50 | 47.50 | 80.00 |
| O.-h. billets, Pittsburgh | 47.50 | 47.50 | 47.50 | 80.00 |
| O.-h. sheet bars, P'gh. | 51.00 | 51.00 | 51.00 | 85.00 |
| Forging billets, base, P'gh. | 60.00 | 60.00 | 60.00 | 115.00 |
| O.-h. billets, Philadelphia | 51.30 | 51.30 | 51.30 | 90.00 |
| Wire rods, Pittsburgh | 57.00 | 57.00 | 57.00 | 90.00 |
| **Finished Iron and Steel,** Per Lb. to Large Buyers: | Cents | Cents | Cents | Cents |
| Iron bars, Philadelphia | 3.73 | 3.73 | 3.73 | 5.185 |
| Iron bars, Pittsburgh | 3.50 | 3.50 | 3.50 | 4.75 |
| Iron bars, Chicago | 3.50 | 3.50 | 3.50 | 4.50 |
| Steel bars, Pittsburgh | 2.90 | 2.90 | 2.90 | 4.00 |
| Steel bars, New York | 3.145 | 3.145 | 3.145 | 4.695 |
| Tank plates, Pittsburgh | 3.25 | 3.25 | 3.25 | 9.00 |
| Tank plates, New York | 3.495 | 3.495 | 3.495 | 10.195 |
| Beams, etc., Pittsburgh | 3.00 | 3.00 | 3.00 | 4.00 |
| Beams, etc., New York | 3.245 | 3.245 | 3.245 | 4.669 |
| Skelp, grooved steel, P'gh. | 2.90 | 2.90 | 2.90 | 4.00 |
| Skelp, sheared steel, P'gh. | 3.25 | 3.25 | 3.25 | 6.00 |
| Steel hoops, Pittsburgh | 3.50 | 3.50 | 3.50 | 5.75 |

*The average switching charge for delivery to foundries in the Chicago district is 50c. per ton.

| | Aug. 20 1918 | Aug. 13 1918 | July 23 1918 | Aug. 22 1917 |
|---|---|---|---|---|
| **Sheets, Nails and Wire,** Per Lb. to Large Buyers: | Cents | Cents | Cents | Cents |
| Sheets, black, No. 28, P'gh. | 5.00 | 5.00 | 5.00 | 8.50 |
| Sheets, galv., No. 28, P'gh. | 6.25 | 6.25 | 6.25 | 10.00 |
| Wire nails, Pittsburgh | 3.50 | 3.50 | 3.50 | 4.00 |
| Cut nails, Pittsburgh | 4.00 | 4.00 | 4.00 | 4.65 |
| Fence wire, base, P'gh. | 3.25 | 3.25 | 3.25 | 3.95 |
| Barb wire, galv., P'gh. | 4.35 | 4.35 | 4.35 | 4.85 |
| **Old Material,** Per Gross Ton: | | | | |
| Carwheels, Chicago | $29.00 | $29.00 | $29.00 | $29.00 |
| Carwheels, Philadelphia | 29.00 | 29.00 | 29.00 | 34.00 |
| Heavy steel scrap, P'gh. | 29.00 | 29.00 | 29.00 | 31.00 |
| Heavy steel scrap, Phila. | 29.00 | 29.00 | 29.00 | 33.00 |
| Heavy steel scrap, Chicago | 29.00 | 29.00 | 29.00 | 30.00 |
| No. 1 cast, Pittsburgh | 29.00 | 29.00 | 29.00 | 30.00 |
| No. 1 cast, Philadelphia | 29.00 | 29.00 | 29.00 | 33.00 |
| No. 1 cast, Ch'go, net ton | 30.00 | 29.00 | 28.25 | 24.00 |
| No. 1 RR. wrot, Phila. | 34.00 | 34.00 | 34.00 | 45.00 |
| No. 1 RR. wrot, Ch'go, net | 29.75 | 29.75 | 29.75 | 34.00 |
| **Coke, Connellsville,** Per Net Ton at Oven: | | | | |
| Furnace coke, prompt | $6.00 | $6.00 | $6.00 | $15.00 |
| Furnace coke, future | 6.00 | 6.00 | 6.00 | 10.00 |
| Foundry coke, prompt | 7.00 | 7.00 | 7.00 | 14.00 |
| Foundry coke, future | 7.00 | 7.00 | 7.00 | 12.50 |
| **Metals:** | | | | |
| Per Lb. to Large Buyers: | Cents | Cents | Cents | Cents |
| Lake copper, New York | 26.00 | 26.00 | 26.00 | 26.50 |
| Electrolytic copper, N. Y. | 26.00 | 26.00 | 26.00 | 26.50 |
| Spelter, St. Louis | 8.87½ | 8.50 | 8.37½ | 8.50 |
| Spelter, New York | 9.12½ | 8.80 | 8.62½ | 8.75 |
| Lead, St. Louis | 7.75 | 7.75 | 7.75 | 10.50 |
| Lead, New York | 8.05 | 8.05 | 8.05 | 10.62½ |
| Tin, New York | 92.00 | 94.00 | 94.00 | 61.75 |
| Antimony (Asiatic), N. Y. | 13.75 | 13.00 | 13.25 | 15.00 |
| Tin plate, 100-lb. box, P'gh. | $7.75 | $7.75 | $7.75 | $10.00 |

The local steel situation is very quiet. The shortage in coal is affecting operations at some blast furnaces and steel works to some extent. The matter has been taken up actively by the Fuel Administration and early relief may come. The heads of many of the large steel companies are away on well-earned vacations in order to get some rest before the strenuous work of the fall and winter is taken up. The main feature of the situation is the great shortage in supply of pig iron, said to be the worst ever known, and it will likely get worse. The shortage in semi-finished steel is also nearly as great as in pig iron. Also in scrap, there is not nearly enough to go around. All this is working to keep down output at a time when it is so badly needed for the prosecution of the war.

**Pig Iron.**—The country is now in the greatest famine of pig iron ever known, and it will get worse as time goes on. There is not a single steel works making pig iron that would not be glad to buy iron, but it cannot be had. As an example of how acute the shortage is, we can say that the other day a large steel company that makes thousands of tons of pig iron daily was glad to buy a little lot of only 100 tons. It is said that several Southern furnaces have firmly decided to close down early in October, unless an advance in prices is made for last quarter. If they do close, they intend to sell their ore and coke, stating they can make money by doing this, while to continue making pig iron at present prices means an absolute loss. Several southern Ohio furnaces give their recent cost of making Bessemer iron at $35 per ton. Six or seven of the larger steel companies are scouring the markets everywhere, trying to find iron, but without avail. It is believed that production has about reached maximum. The situation as regards supply of iron is so bad that the War Industries Board is said to be gathering data as to idle furnaces in various parts of the country, to see if some of these cannot be put into commission again. There have been no recent sales of iron, simply for the reason that none is for sale for delivery this year. The shutting off of shipments of borings and turnings to blast furnaces, except those running on low phosphorus iron, may decrease the output of iron until Sept. 22, on which date the embargo is to be lifted. The Carnegie Steel Co. is hurrying the work on its two Edgar Thomson furnaces at Bessemer, in order to get them going again as soon as possible.

Basic pig iron, $32; Bessemer, $35.20; gray forge, $32; No. 2 foundry, $33; No. 3 foundry, $32.50, and malleable $33.50, all per gross ton at Valley furnace, the freight rate for delivery in the Cleveland and Pittsburgh district being $1.40 per ton.

**Billets and Sheet Bars.**—The supply of semi-finished steel in the shape of billets and sheet bars is getting more contracted. There is a heavy inquiry from consumers, and from makers as well, the latter anxious to pick up any steel they can, in order to help out on contracts, on which they are back in shipments. Local steel mills are working on orders for 50,000 tons or more of shell steel, on which the Government wants the shipments this month. Mills that have contracts with sheet and tin mills for bars are shipping Bessemer steel entirely, and it is said that several large consumers of bars have been notified that when present contracts expire they will have to look around for a new source of supply. Government demands for steel are getting larger right along, and the shortage in steel is becoming more acute. Shipments of steel are being scanned very closely, and the supply of some consumers has recently been reduced.

We quote 4 x 4 in. soft Bessemer and open-hearth billets at $47.50, sheet bars $51, forging ingots $73, and forging billets $60 base, all f.o.b. at mill, Pittsburgh or Youngstown.

**Ferroalloys.**—There is quite an active inquiry for ferromanganese from consumers who desire to cover their needs for first half of next year. Some consumers have already done so, but others are holding off. A Wheeling interest that wanted about 1000 tons has postponed buying until next month. The Wheeling Mold & Foundry Co. has a large inquiry out for ferromanganese, ferrosilicon and other alloys. A local steel company is figuring on the purchase of 2000 tons of

ferromanganese, but seems in no hurry to close. Some fairly heavy sales of Bessemer ferrosilicon and silvery iron are reported to have been made for first half delivery.

We quote 70 per cent ferromanganese at $250 delivered, 16 per cent spiegeleisen at $75 at furnace and 50 per cent ferrosilicon for prompt shipment at $160 and for delivery over the last half of the year, $150 to $155 at furnace, the furnaces usually absorbing the freight.

We quote 9 per cent Bessemer ferrosilicon at $54; 10 per cent, $55; 11 per cent, $58.30; 12 per cent, $61.60. We quote 6 per cent silvery iron, $41; 7 per cent, $43; 8 per cent, $45.50; 9 per cent, $47.50; 10 per cent, $50. Three dollars per gross ton advance for each 1 per cent silicon for 11 per cent and over. All the above prices are f.o.b. maker's furnace, Jackson or New Straitsville, Ohio, these furnaces having a uniform freight rate of $2 per gross ton, for delivery in the Pittsburgh district.

**Structural Material.**—Fully 90 per cent of the new work being placed is for the Government. Railroads are placing very little work and it must be shown to be essential before it is accepted. Delivery of steel by the mills to the fabricators is said to be fairly good, much better than some time ago. We quote beams and channels up to 15 in. at 3c. at mill, Pittsburgh, for third quarter delivery.

**Plates.**—Local mills say they are simply choked with orders, nearly all from the Government. However, deliveries of plates to the shipyards and to other companies doing Government work are good. The two local steel car companies are filled with Government work for some months, and are very heavy users of plates and small shapes. We quote ¼-in. and heavier sheared plates for third quarter at 3.25c. at mill, Pittsburgh.

**Iron and Steel Bars.**—There have been protests against the granting of the $5 concession in prices of soft steel bars to implement makers, but there seems to be no doubt of its being allowed and applying on all shipments over the last six months of this year. This action is simply following a precedent that has obtained in the steel bar trade for some years. The implement makers had said positively that unless they got the $5 concession they would have to advance prices on farming implements. The output of steel bars is well taken on Government work, but this is not the case with iron bars, which can be had from some mills for fairly prompt shipment. We quote soft steel bars rolled from billets at 2.90c.; from old steel rails, 3c., and refined iron bars at 3.50c. at mill, Pittsburgh, for third quarter delivery.

**Sheets.**—Mills rolling sheets are not operating this month to an average of more than 60 per cent and it is doubtful whether that rate will be maintained all through the month. The shortage in supply of sheet bars is getting worse and no relief is in sight. For some time, the American Sheet & Tin Plate Co. has been operating its sheet mills to only about 45 per cent. Mills are sold up on Government and commercial business into October or later. Prices on sheets are given in detail on page 473.

**Tin Plate.**—Output is still running at 90 to 95 per cent of capacity, and recent reports of a serious shortage in the supply of tin plate are said by the manufacturers to be absolutely wrong. On the contrary, they say enough tin plate will be made this year to fully meet the demand for food containers and other essential purposes. The supply of pig tin is reported better. Weather conditions in August have been bad, and output this month will be less than in July. The output of tin plate for the first seven months of this year is unofficially put at 20,000,000 base boxes. If this rate is maintained over the rest of the year it will show an output for 1918 of close to 36,000,000 base boxes. We quote tin plate for third quarter at $7.75 per base box, f.o.b. Pittsburgh. Prices on terne plate for this quarter are given on page 473.

**Wire Rods.**—A large Chicago consumer has an inquiry in the market for 300 to 500 tons of soft wire rods per week, running over the next several months. Two of the local makers have declined to quote on the inquiry, saying they do not have the rods to spare. The general demand is only fairly active, but local mills say their output is much restricted by the shortage of steel. High carbon rods are in fair demand. Prices on ..de are given on page 473.

**Wire Products.**—A meeting of the Sub-Committee on Wire Products was held in New York last week to discuss the interpretations to be put on the recent rulings from the War Industries Board, which put more restrictions on shipments of wire products to the jobbers. There is a great shortage in the supply of nails and wire, and local mills say they are refusing to quote nearly every day on desirable orders, as they do not have the material to spare. The Mid-Continent demand from jobbers is only fair, due to the large falling off in building operations, and in addition, farmers are not building new fences, owing to the high prices of wire and the scarcity of labor. An inquiry from the Government for 20,000 to 25,000 tons of plain wire for shipment to France is looked for at any time. Mills are well sold up for remainder of this year. Prices on wire products for third quarter are given on page 473.

**Cotton Ties.**—All makers of cotton ties are more or less back in shipments to their customers, due to the shortage in steel, but expect to ship the full quota before the season in cotton ties closes about Nov. 1. The cotton crop this year will not be as large as expected, owing to the recent bad weather. Cotton ties for August delivery are $1.94 per bundle of 45 lb., f.o.b. Pittsburgh.

**Shafting.**—The commercial demand is only fairly heavy, but the Government is still taking from 85 to 90 per cent of the present limited output of shafting on direct and indirect orders. The demand from the implement trade is good and on the larger sizes makers are sold up for three or four months, but on the small sizes can make fairly prompt delivery. For third quarter the discount on cold-rolled shafting is 17 per cent off list in carloads and 12 per cent in small lots, f.o.b. Pittsburgh.

**Nuts and Bolts.**—Government demand is very heavy, orders being placed with makers nearly every day and very frequently carload and even two or three carload shipments are made by express in order to facilitate quick delivery. Owing largely to the draft and also because of shortage in steel, the present output of nuts and bolts is not more than 70 per cent of normal. Jobbers are supplying fairly large quantities of nuts and bolts to railroads and to coal companies, this being regarded as war business. Makers report they are sold up for three months. Discounts for third quarter are given on page 473.

**Rivets.**—Present output of rivets is not more than 60 to 70 per cent of normal owing to shortage of steel and labor. Government orders are taking nearly the entire output. The commercial demand is quiet. We quote buttonhead structural rivets at $4.40, conehead boiler rivets at $4.50 per 100 lb. and small rivets at 50 and 10 per cent off list for third quarter, f.o.b. Pittsburgh.

**Hoops and Bands.**—Mills rolling hoops and bands are working nearly entirely on Government orders, the commercial demand being light. For some time, the demand for hoops for cooperage purposes was very heavy, but this has fallen off lately. Output is not more than 60 to 70 per cent of normal. We quote steel hoops and bands at 3.50c. per lb., f.o.b. Pittsburgh for third quarter. Extras and differentials in effect were printed in full on pages 1357 and 1374 of THE IRON AGE of May 23.

**Spikes.**—The Government placed lately orders for 20,000 to 25,000 kegs of railroad spikes to be used with rails for shipment to France, nearly all the business going to a local maker. The demand for small and boat spikes is not so heavy as some time ago, but the recent order for 42 wooden ships placed by the Government will require a very large quantity of boat spikes and makers look for these to come out in a short time. Makers are sold up on small spikes for about two months and on boat spikes for three months. We quote:

Standard sizes of railroad spikes 9/16 x 4½ in. and larger, $3.90 per 100 lb. in lots of 200 kegs of 200 lb. each, or in larger lots. Boat spikes, $5.25 per 100 lb., tack bolts, $4.90 base in lots of 200 kegs or more; less than 200 keg lots, $1 per 100 lb. extra. All f.o.b. Pittsburgh.

**Hot-Rolled Strip Steel.**—The Government demand

for hot-rolled steel is heavy, it being used largely for ordnance and other war work. The commercial demand is only fair. Mills are operating to 75 or 80 per cent of capacity. We quote hot-rolled strip steel at $3.50 per 100 lb., f.o.b. Pittsburgh for third quarter, 50c. additional per 100 lb. being charged for special stamping quality.

**Cold-Rolled Strip Steel.**—Government buying is only fair, no large orders having been placed for some time. Commercial buyers such as automobile and bicycle builders, also furniture makers and others, are now in class D, and these concerns are not getting material. We quote:

We quote cold-rolled strip steel at $6.50 per 100 lb., f.o.b. Pittsburgh, terms 30 days, less 2 per cent for cash in 10 days when sold in quantities of 300 lb. or more. Freight is allowed to destination when it does not exceed 31c. per 100 lb.

**Skelp.**—Mills rolling iron and steel skelp are said to be sold up for the remainder of this year. Output is limited owing to shortage of steel. We quote:

We quote grooved skelp at $2.90; universal skelp, $3.15, and sheared skelp, $3.25 base. Special skelp for boiler tubes, etc., is $3.40 for base sizes and $3.55 for other sizes, all prices being per 100 lb. f.o.b. Pittsburgh.

**Wrought Pipe.**—Shipments of tubular goods to the jobbers this month have been fairly large, but not heavy enough to replenish the badly broken stocks. The Government is still buying freely and probably 85 per cent of the business on the books of the pipe mills to-day is direct or indirect Government work. Mills are operating to 85 or 90 per cent of capacity, but output this month will be less than in July owing to the recent hot weather. Mills report they are filled for this year and perhaps longer. Discounts on iron and steel pipe for this quarter are given on page 473.

**Boiler Tubes.**—The entire output of boiler and seamless steel tubes for the next five or six months will go to the Government. The commercial demand for casing and other oil country goods is very heavy, development work in the oil fields being very active. Discounts on iron and steel tubes for this quarter are given on page 473.

**Old Materials.**—Present conditions in the scrap trade are referred to by local dealers as being more satisfactory than for some time. A fair amount of material is moving from dealers to consumers and the latter are willing and anxious to pay the 3½ per cent commission. Very little scrap is coming into the Pittsburgh district from Detroit and other places, the railroads refusing to issue permits for hauling it, claiming they are badly congested. The demand for open-hearth steel scrap and for low phosphorus is very heavy and we note sales of 5000 to 6000 tons of the latter at $39 delivered to buyers' mills plus the 3½ per cent commission. We quote prices on iron and steel scrap in effect for third quarter plus the 3½ per cent commission for delivery in Pittsburgh and other points that take Pittsburgh freights as follows:

| | |
|---|---|
| Heavy steel melting scrap, Steubenville, Follansbee, Brackenridge, Monesson, Midland and Pittsburgh, delivered | $29.00 |
| No. 1 cast scrap (for steel plants) | 29.00 |
| Rerolling rails, Newark and Cambridge, Ohio, Cumberland, Md., Franklin, Pa., and Pittsburgh | 34.00 |
| Hydraulic compressed steel scrap | 29.00 |
| Bundled sheet scrap, sides and ends, f.o.b. consumer's mills, Pittsburgh, district | $27.50 to 29.00 |
| Bundled sheet stamping scrap | 22.00 to 23.00 |
| No. 1 busheling scrap | 28.00 to 29.00 |
| Railroad grate bars | 18.00 to 19.00 |
| Low phosphorus melting stock (unguaranteed) | 34.00 |
| Low phosphorus melting stock (guaranteed) | 36.50 |
| Low phosphorus melting stock (bloom and billet ends heavy plates) | 39.00 |
| Iron car axles | 46.00 to 46.50 |
| Locomotive axles, steel | 46.00 to 46.50 |
| Steel car axles | 46.00 to 46.50 |
| No. 1 busheling scrap | 28.00 to 29.00 |
| Machine shop turnings | 19.00 |
| Cast iron wheels | 29.00 |
| Rolled steel wheels | 36.00 |
| Sheet bar crop ends (at origin) | 35.00 |
| Cast iron borings | 19.00 |
| No. 1 railroad wrought scrap | 34.00 |
| Heavy steel axle turnings | 24.00 |
| Heavy breakable cast scrap | 28.00 to 29.00 |

**Coke.**—A good deal of coke is still being commandeered, one Buffalo concern having received recently in this way about 15,000 tons, while two local steel companies whose output of pig iron was being imperiled by a shortage in coke have each received nearly as large a quantity and are still getting some. Output of coke fell off very much during the recent hot weather, but is again about back to normal. The labor supply is reported fairly good and the car supply, while a little short on some days, yet seems ample to move promptly all the coke that is being made, and there is no shortage at the furnaces. The Connellsville *Courier* reports the output of coke in the upper and lower Connellsville regions for the week ending Aug. 10 as 319,010 tons, a decrease from the previous week of 21,970 tons. We quote 48-hr. blast furnace coke at $6; 72-hr. foundry at $7 and crushed coke over ¾-in. at $7.30, all in net tons of 2000 lb. at oven.

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The new additions to be made at the works of the Fulton Steel Corporation, Fulton, N. Y., will cost about $100,000. The contract for erection has been let to the Levering & Garrigues Co., 552 West Twenty-third Street, New York, and it is planned to complete the construction the latter part of October. With installations now being made, it is proposed to increase the output of the plant about 400 per cent, including rolling mill, annealing department, and other structures. A 6-ton electric furnace is now being constructed and it is planned to place this unit in operation by Sept. 15. It is understood that the works will give employment to about 400 persons. H. C. Beaver is president. Headquarters of the company are at 149 Broadway, New York.

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Ocean vessels having an aggregate capacity of 450,000 tons will be constructed, it is estimated, in Canada during the present year. There will be an output from Canadian yards of 59 steel ships of a total capacity of 290,000 tons, and 53 wooden ships aggregating 160,000 tons. In this computation are included the vessels being completed under orders placed by the Imperial Munitions Board, Ottawa, Ont., for the British Government, 20 steel ships to be constructed for the Dominion Government and a few being constructed for private parties. The Department of Marine has just placed orders for seven more steel freighters, bringing the total for which it has awarded contracts up to 20.

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The Phœnix Iron Co. and the Phœnix Bridge Co., whose general offices in Philadelphia have been located for more than 60 years at 410 Walnut street, have moved to the ninth floor of the Franklin Trust Building, 22 South Fifteenth Street, just a half block from the Broad street station of the Pennsylvania Railroad. In recent years there has been a steady stream of removals among steel and machinery companies from the "downtown" section of Philadelphia to the business center closely adjacent to the Pennsylvania Railroad station.

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The electric welding committee of the Emergency Fleet Corporation will hold a joint session with the Philadelphia sections of the Association of Iron and Steel Electrical Engineers and the American Institute of Electrical Engineers and the Engineers' Club of Philadelphia, at the Bellevue-Stratford Hotel, Philadelphia, Sept. 16, at 8 p. m. The subject of "Electric Welding, a New Industry" will be discussed.

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The shortage of water supply in the Southern Illinois coal mining district has seriously interfered with the coal output, because of the reduction in the power needed for the mine power and hoisting plants. These plants have been accustomed to getting their water supply from near-by ponds and lakes, but these have practically dried up in the recent severe heat.

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Some time before his death, Frank H. Buhl, the former well known steel manufacturer of Sharon, Pa., gave to Sharon a large sum of money to erect a building to house the Sharon Sunshine Society. The new building has been completed and was dedicated on Friday, Aug. 16.

## Chicago

CHICAGO, Aug. 19 (*By Wire*).

Highest possible production of steel is the sole aim of mills, with all other considerations subordinated. Fuel conditions are such that ample supply for present needs is available, though no winter reserve is being accumulated. Car supply for outgoing shipments is sufficient, and the heated term produced little diminution in output except the sheet mills, which felt the torrid period most. The reduced price for agricultural bars is regarded in some quarters as favoritism which may lead to an endless line of requests from other consumers. Makers of heavy ship chains, requiring a special grade of bar iron, finding their usual sources in the East unable to take more, are asking Western mills for tonnage. The latter have little business in usual lines and are taking it gladly.

Jobbers are meeting keen disappointment in the fact that the recent arrangement for placing orders for tonnage equal to purchases of an average month is not producing shipments. The priority classification is too far below the heavy war orders to give mills opportunity to get out their requirements.

The pig iron situation is in statu quo with producers waiting for the situation to clear before taking on first half contracts freely.

Bolt and nut makers have so much business on books they are accepting little additional. More standard steel rails are being turned out than recently, steel being diverted from other purposes to meet the Government's needs for France.

**Pig Iron.**—Unusual quiet marks the pig iron market in this district, the small selling for first half that had started being stopped for the present. Demand is keen, but the situation is not yet clarified sufficiently to allow selling. Furnaces are making fairly good deliveries in the North, but Southern stacks are far behind, partly from poor operation and partly from allocations of basic for export. Many special grades are practically unobtainable. Some iron is being allocated ahead of contract obligations, which has a tendency to delay shipments. However, most melters engaged on essential work have iron on contract which is being delivered and do not need special tonnage allotments. This is saving the day for producers. Off iron from the South is being taken readily, contracts allowing wide latitude in analysis having been made some time ago, on which it can be applied.

The following quotations are for iron delivered at consumers' yards, except those for Northern foundry, malleable, steel-making irons, which are f.o.b. furnace, and do not include a switching charge averaging 50c. per ton:

| | |
|---|---|
| Lake Superior charcoal, Nos. 2 to 5 | $38.00 |
| Lake Superior charcoal, No. 6 and Scotch | $39.50 to 41.00 |
| Northern coke foundry, No. 1 | 33.50 |
| Northern coke foundry, No. 2 | 33.00 |
| Northern coke foundry, No. 3 | 32.50 |
| Northern high-phosphorus foundry | 33.00 |
| Southern coke No. 1 foundry and No. 1 soft | 39.50 |
| Southern coke, No. 2 foundry | 38.00 |
| Malleable | 33.50 |
| Basic | 32.00 |
| Low phosphorus (copper free) | 53.00 |
| Silvery, 7 per cent | 46.20 |

**Ferroalloys.**—With the local producer of ferromanganese almost covered for the remainder of the year, demand is not coming this way heavily, though much exists, broadly speaking. Foundries continue to seek ferrosilicon on account of silicon being low in most of the pig iron which they are using. Fifty per cent ferrosilicon is more active than the lower grades. Spiegeleisen is also in strong demand, and much of this grade is being produced here. Prices are unchanged.

**Plates.**—Plate mills continue to be pressed closely for deliveries, ship material leading, while car plates are also booked in large volume. Though some delays in ship material have been met, deliveries have been kept fairly close to needs of yards and most schedules are near to contract agreements. Bessemer plates are being used in cars to some extent. Material for military cars has not been allotted, though some has been booked by one local producer on affidavit and will be given preference over domestic car material. Plates for export to Japan are practically all shipped and efforts now are on plates for local shipyards.

The official mill quotation is 3.25c., Pittsburgh, the freight to Chicago being 27c. per 100 lb. Jobbers who have stock quote 4.52c.

**Bars.**—The grant of $5 per ton reduction under the Government maximum on bars for implement makers has not been announced here. No instructions have been received to book business on that basis or to scale invoices to meet such a reduction, but one interest has circularized the trade to the effect that it will apply the new price from July 1, if granted. Most steel makers oppose the change as likely to open an endless line of requests for reductions by other consumers. The total bars used by implement makers is estimated at 500,000 tons per year, though it may be less this year on account of closer standardization. The reported price is to apply only to material going into implements and not to other lines made by the same concerns. Hard steel bars continue scarce, as old rails are not available to sufficient degree. Bar iron mills are booking much chain iron for equipment of ships. This formerly was produced mostly in the East. Ordinary demand for bar iron is slack.

We quote, mill prices, mild steel bars at 2.90c., Pittsburgh, taking a freight rate to Chicago of 27c. per 100 lb. Bar iron is quoted at 3.50c., Chicago, and rail carbon at 3c., Chicago, a leading maker, having adhered to Chicago as the basing point. Jobbers' prices follow:

Soft steel bars, 4.17c.; bar iron, 4.17c.; reinforcing bars, 4.17c., base. No extra charge for twisting ¾-in. and over; 2½c. for twisting ⅝, 11/16, ½ and 9/16; 5c. for 7/16 and ⅜; 10c. for 5/16 and 15c. per ¼-in. Extras as per card are charged for small sizes. Shafting, list plus 13 per cent.

**Structural Material.**—The Decatur Bridge Co. will fabricate 900 tons for mill buildings for the Illinois Zinc Co., Peru, Ill. The American Bridge Co. has taken 188 tons for Western Electric Co. extensions at Hawthorne Works, Chicago, and 185 tons for a turntable for the Chicago & Northwestern Railroad at Cedar Rapids, Iowa. The Illinois Steel Co., North Works, will fabricate 318 tons for a coal handling bridge for the Duluth, Missabe & Northern Railroad. Bids are being taken on 2000 tons for a foundry addition for the Hooven-Owens-Rentschler Co., Hamilton, Ohio.

The official mill quotation is 3c., Pittsburgh, which takes a freight rate of 27c. per 100 lb. for Chicago delivery. Jobbers quote 4.27c. for material out of warehouse.

**Wire Products.**—Trade in wire is seasonably dull. Lack of classification for fencing in the wire schedule is causing some difficulty in placing orders. For prices see finished iron and steel f.o.b. Pittsburgh, page 473.

**Sheets.**—Though the Government takes few sheets in comparison with other finished steel, large tonnages are required by manufacturers of war material. Inquiry is current now for 1500 tons of heavy gage for making airplane drop bombs, which probably will be placed here. For mill prices see finished iron and steel f.o.b. Pittsburgh, page 473.

Chicago delivery out of stock regardless of quantity. No. 10 blue annealed, 5.52c.; No. 28 black, 6.52c., and No. 28 galvanized, 7.77c.

**Bolts and Nuts.**—Some Western makers have booked such heavy commitments of these products that they are refusing most inquiries and accepting only the most urgent business. Some shortage of material is noted, but not to a serious degree. For mill prices and freight rates see finished iron and steel f.o.b. Pittsburgh, page 473. Jobbers quote:

Structural rivets, 5.67c.; boiler rivets, 5.77c.; machine bolts up to ⅞ x 4 in., 37½ per cent off; larger sizes 25 and 5 off; carriage bolts up to ¾ x 6 in., 32½ off; larger sizes, 20 off; box pressed nuts, square, tapped, $1.05 off; hexagon tapped, 85c. per 100 lb.; coach or lag screws, gimlet points, square heads, 40 per cent off.

**Cast Iron Pipe.**—With demand continuing dull, the only prospect of business in fair tonnage is from the Government, which opened bids Aug. 17 on about 1000 tons of extra heavy pipe for the Rock Island Arsenal. No award has been made. Special castings and routine orders in small lots make up the remainder of the business.

We quote per net ton f.o.b. Chicago ex-war tax as follows: Water pipe 4-in., $64.80; 6-in. and larger, $61.80. Class A and gas pipe $1 extra.

**Rails and Track Supplies.**—Rail mills are producing more heavily to supply the Government's order for

France. Steel is being diverted from other finishing mills to give fuller rail output. Light rails for coal mines are in demand and also for export for military use. Delivery is about 90 days as a rule. We quote:

Standard railroad spikes, 4.11½c., Chicago. Track bolts, with square nuts, 5.11½c., Chicago. Tie plates, steel, 3.25c.; tie plates, iron, 3.75c.; f.o.b. maker's mill. The base for light rails is 3c., f.o.b. maker's mill for 25 to 45-lb. sections, lighter sections taking Government extras.

**Old Material.**—Shortage of scrap continues and both dealers with short sales and consumers of heavy steel grades are alert for every lot that presents itself. Some tonnages remain unshipped on permits for movement eastward granted some time ago. Railroad offerings are light. The Chicago Great Western offers 500 tons.

We quote for delivery in buyers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

| | *Per Gross Ton* | |
|---|---|---|
| Old iron rails | $39.00 | |
| Relaying rails | $55.00 to | 60.00 |
| Old carwheels | | 29.00 |
| Old steel rails, rerolling | | 34.00 |
| Old steel rails, less than 5 ft | | 34.00 |
| Heavy melting steel | | 29.00 |
| Frogs, switches and guards, cut apart | | 29.00 |
| Shoveling steel | | 29.00 |
| Steel axle turnings | | 24.00 |
| | *Per Net Ton* | |
| Iron angles and splice bars | | $34.82 |
| Iron arch bars and transoms | | 41.50 |
| Steel angle bars | | 30.36 |
| Iron car axles | | 41.52 |
| Steel car axles | | 41.52 |
| No. 1 railroad wrought | $29.75 to | 30.36 |
| No. 2 railroad wrought | 28.25 to | 28.75 |
| Cut forge | 28.25 to | 28.75 |
| Pipes and flues | 24.50 to | 25.00 |
| No. 1 busheling | 27.00 to | 27.50 |
| No. 2 busheling | 18.50 to | 19.00 |
| Steel knuckles and couplers | | 30.36 |
| Coil springs | | 30.36 |
| No. 1 cast scrap | 30.00 to | 30.36 |
| Boiler punchings | 32.00 to | 33.00 |
| Locomotive tires, smooth | 40.50 to | 41.50 |
| Machine-shop turnings | 15.75 to | 16.25 |
| Cast borings | 16.50 to | 16.96 |
| Stove plate and light cast scrap | | 25.50 |
| Grate bars | | 24.50 |
| Brake shoes | 24.75 to | 25.25 |
| Railroad malleable | | 30.36 |
| Agricultural malleable | 29.00 to | 30.00 |
| Country mixed scrap | 21.00 to | 21.50 |

## Buffalo

BUFFALO, Aug. 19.

**Pig Iron.**—Although inquiry keeps pouring in, aggregating large tonnages for all grades of iron, very little business aside from allocated orders can be taken on by the furnaces of the district. There is not a single grade of pig iron that is not being eagerly and anxiously sought for by a host of users. One of the large producers of the district is now giving consideration to nothing but allocated orders, and the other selling interests are taking practically the same stand regarding business at present being placed on their books. The amount of current booking for 1919 appears to be becoming smaller in volume right along and covers only such business as after careful investigation the producer feels assured is strictly for essential work, so classed by the Government. The fact that the Government is taking iron in such tremendous quantities has thrown shipments behind on old and not strictly essential orders to the extent of thousands of tons. The price schedule is as follows, f.o.b. furnace, Buffalo:

| | |
|---|---|
| No. 1 foundry, 2.75 to 3.25 silicon | $34.50 |
| No. 2 X, 2.25 to 2.75 silicon | 33.50 |
| No. 3 foundry, 1.75 to 2.25 silicon | 32.50 |
| Gray forge | 32.00 |
| Malleable | 33.50 |
| Basic | 32.00 |
| Lake Superior charcoal, regular grades, f.o.b. Buffalo | 37.50 |

**Finished Iron and Steel.**—Direct Government requirements are absorbing practically the entire output of finished materials. Jobbers' stocks are being depleted and many manufacturers, even those working on Government orders, are unable to obtain full requirements from their regular sources of supply. This condition undoubtedly has been occasioned by the assigning of semi-finished steel to more pressing Government needs, and very little relief is in prospect during the remainder of the year, sales agencies say. An acute shortage has developed in nails and wire products. The local manufacturer of wire nails and barbed wire is tied up exclusively to the Government for its entire product for the remainder of the year. It is understood that some manufacturers of nails are using shell quality steel, which makes a good quality of nails, but at greatly increased cost of production.

**Old Material.**—The demand for heavy melting steel continues to exceed the supply and large inquiry is noted in other lines. The Buffalo district is not much affected by the recent order prohibiting turnings of any character being shipped to blast furnaces, as none of the furnaces of the district has been using wrought iron and steel turnings. Nevertheless, much surprise is expressed in local scrap circles at the order of Judge Gary, in view of the fact that the output of both shell turnings and ordinary machine shop turnings is extraordinarily large at the present time and would apparently be sufficient to satisfy requirements of both blast furnaces and open hearth furnaces if properly distributed. For some time past it has been understood that blast furnaces in the Pittsburgh and Youngstown districts, particularly, have been experiencing difficulty in buying machine shop turnings at the Government price of $19 plus commission, and that considerable tonnages of so-called shoveling machine shop turnings have been sold above the Government price, there being no Government classification that would permit ordinary shoveling turnings to be sold above the regular $19 price except for chemical purposes, and no purchases of such turnings are now being made by chemical industries here. If it is discovered that any violation of rules is being made by dealers or producers, it is expected that action will be taken. Prices are as follows, per gross ton, f.o.b. Buffalo:

| | |
|---|---|
| Heavy melting steel | $29.00 |
| No. 1 low phosphorous, heavy, 0.04 and under | 39.00 |
| Low phosphorous, 0.04 and under | 36.50 |
| Low phosphorous, not guaranteed | 34.00 |
| No. 1 railroad wrought | 34.00 |
| No. 1 railroad and machinery cast | 34.00 |
| Iron axles | $44.00 to 46.00 |
| Steel axles | 44.00 to 46.00 |
| Carwheels | 29.00 |
| Railroad malleable | 34.00 |
| Machine shop turnings | 17.00 to 17.50 |
| Heavy axle turnings | 24.00 |
| Clean cast borings | 18.00 to 19.00 |
| Iron rails | 36.00 to 37.00 |
| Locomotive grate bars | 27.50 to 28.00 |
| Stove plate | 27.50 to 28.00 |
| Wrought pipe | 27.00 to 28.00 |
| No. 1 busheling scrap | 29.00 to 30.00 |
| No. 2 busheling scrap | 21.00 to 23.00 |
| Bundled sheet stamping scrap | 21.00 to 23.00 |

## St. Louis

ST. LOUIS, Aug. 19.

**Pig Iron.**—The need for pig iron in this district continues sharp, but the inflow is almost entirely under the direction of the Government authorities, except for some small lots of metal not up to analysis, which are disposed of by furnace representatives at infrequent intervals as they come from the furnaces. All such lots are taken up quickly, often with more than one melter seeking the same material.

**Coke.**—Melters are as well provided with contracts for coke as Government conditions will permit and the supply coming in is meeting the needs of the situation, for the most part. The allotment of the output set apart for this district has been practically completed and operations from now on will be on the basis of shipping conditions and the Government requirements. Domestic coke supplies are completely covered by contracts made and no additional supplies are likely to become available for this district according to oven representatives. By-product coke supplies for this district are completely sold up for practically a year ahead.

**Finished Iron and Steel.**—In finished products, there is no change in the situation, the supplies available showing no increase and the quantities coming through

still being subject to censorship as to distribution. Only imperative needs are being filled, everything aside from these requirements going to war work. Stock out of warehouse is moving up to the capacity of the warehouses and for such stock we quote as follows:

Soft steel bars, 4.24c.; iron bars, 4.24c.; structural material, 4.34c.; tank plates, 4.59c.; No. 8 sheets, 5.54c.; No. 10 blue annealed sheets, 5.59c.; No. 28 black sheets, cold rolled, one pass, 6.59c.; No. 28 galvanized sheets, black sheet gage, 7.84c.

**Old Material.**—The dealers are still handicapped by the lack of supplies, the lists appearing in this market being few and small in tonnage. The call for scrap by the industries is sharp despite the hot weather, which has had a tendency to reduce the volume of operations, but the pressure to get work through the plants and the shortage of material is keeping the yards generally close to the ground so far as supplies go. The buying of material would be heavy if there were any possibility of getting it, but the railroads and other sources of scrap are not putting out much and such as is offered goes quickly at Government prices. The freight rate situation in the St. Louis industrial district, as relates to switching charges, continues unsettled with no knowledge as to when the contentions of the scrap men will be ruled upon. We quote dealers' prices, f.o.b. customers' works, St. Louis industrial district, as follows:

| | *Per Gross Ton* | | |
|---|---|---|---|
| Old iron rails | $37.00 | to | $37.50 |
| Old steel rails, rerolling | 33.50 | to | 34.00 |
| Old steel rails, less than 3 ft | 31.00 | to | 31.50 |
| Relaying rails, standard sections, subject to inspection | 55.00 | to | 65.00 |
| Old carwheels | 28.50 | to | 29.00 |
| No. 1 railroad heavy melting steel scrap | 28.50 | to | 29.00 |
| Heavy shoveling steel | 27.00 | to | 27.50 |
| Ordinary shoveling steel | 26.50 | to | 27.00 |
| Frogs, switches and guards, cut apart | 28.50 | to | 29.00 |
| Ordinary bundled sheet scrap | 23.00 | to | 23.50 |
| Heavy axle and tire turnings | 20.50 | to | 21.00 |
| | *Per Net Ton* | | |
| Iron angle bars | $33.00 | to | $33.50 |
| Steel angle bars | 27.00 | to | 27.50 |
| Iron car axles | 40.00 | to | 40.50 |
| Steel car axles | 40.00 | to | 40.50 |
| Wrought arch bars and transoms | 40.00 | to | 40.50 |
| No. 1 railroad wrought | 28.50 | to | 29.00 |
| No. 2 railroad wrought | 27.50 | to | 28.00 |
| Railroad springs | 29.50 | to | 30.00 |
| Steel couplers and knuckles | 29.50 | to | 30.00 |
| Locomotive tires, 42 in. and over smooth inside | 37.00 | to | 37.50 |
| No. 1 dealers' forge | 26.00 | to | 26.50 |
| Cast-iron borings | 16.25 | to | 16.75 |
| No. 1 busheling | 25.50 | to | 26.00 |
| No. 1 boilers cut to sheets and rings | 22.50 | to | 23.00 |
| No. 1 railroad cast scrap | 28.00 | to | 28.50 |
| Stove plate and light cast scrap | 23.00 | to | 23.50 |
| Railroad malleable | 26.00 | to | 26.50 |
| Agricultural malleable | 25.00 | to | 25.50 |
| Pipes and flues | 23.00 | to | 23.50 |
| Heavy railroad sheet and tank scrap | 22.50 | to | 23.00 |
| Railroad grate bars | 20.00 | to | 20.50 |
| Machine shop trimmings | 16.00 | to | 16.50 |
| Country mixed scrap | 19.50 | to | 20.00 |
| Uncut railroad mixed scrap | 23.50 | to | 24.00 |

## Birmingham

BIRMINGHAM, ALA., Aug. 19 (*By Wire*).

**Pig Iron.**—English basic iron allocations are now as follows: Alabama Co., 19,000 tons; Sloss-Sheffield Steel & Iron Co., 38,000, and Woodward Iron Co., 38,000. The Sloss-Sheffield company has also 10,000 for Italy. Alabama stocks Aug. 1 comprised only 50,000 tons of foundry and about the same in basic belonging to the Tennessee company reserved for its own use. Foundry allocations cover the entire country and require practically the entire make. Orders for 50,000 tons of 1919 iron placed on order books tentatively have been cancelled. All large machine shops are practically 100 per cent on war work and small shops are converting to it.

| | |
|---|---|
| No. 2 foundry and soft | $33.00 |
| Basic | $2.00 |

**Cast Iron Pipe.**—Few additional pipe orders have been received, but plants are comparatively active on castings for war purposes.

**Coal and Coke.**—The coal output continues around maximum of 430,000 tons reported several weeks ago. Fifteen hundred tons of coke is going to Mexico.

**Old Material.**—Scrap dealers insist on higher prices and Southern consumers are equally firm in refusing advances. Business is largely confined to delivery on old contracts.

| | | | |
|---|---|---|---|
| Old steel axles | $35.00 | to | $36.00 |
| Old steel rails | 28.00 | to | 28.50 |
| Heavy melting steel | 25.50 | to | 26.50 |
| No. 1 railroad wrought | 28.00 | to | 30.00 |
| No. 1 cast | 27.50 | to | 28.50 |
| Old carwheels | 29.00 | to | 29.50 |
| Tramcar wheels | 26.00 | to | 26.50 |
| Machine shop turnings | 15.00 | to | 16.00 |
| Cast-iron borings | 15.00 | to | 16.00 |
| Stove plate | 23.00 | to | 23.50 |

## San Francisco

SAN FRANCISCO, Aug. 13.

The shipyards and Government work relating to the war are absorbing nearly all the iron and steel in this market. The launching of the 12,000-ton cargo carrier at the Alameda yards of the Bethlehem Shipbuilding Corporation on Aug. 4 marked an epoch in shipbuilding, and illustrated the rapid consumption of steel for that purpose. The keel of the vessel was laid on July 4, and in just 24 actual working days the big vessel was launched. The new Liberty yards, now under full swing of construction at Alameda, will be one of the most important consumers of structural steel in this territory during the construction period. Another important consumer of iron and steel is the improvement which has been authorized for the Mare Island Navy Yard, which, it is estimated, will cost $1,000,000. The Government has called for bids for this construction, and it will be the largest contract so far let this year outside the shipyard plants.

**Bars.**—The supply seems ample for all legitimate business, and the jobbers report that their stocks of bars are in better shape than of any other material.

**Structural Materials.**—Some structural material is going into warehouses, especially those being built to care for food, but such material is hard to get, and nearly all coming to the Coast is for use in the shipyards.

**Plates.**—There are no plates to be had in the open market. The jobbers have a small stock on hand, but they are being held exclusively for Government use.

**Sheets.**—Sheets are probably one of the scarcest articles on this market. Galvanized sheets have been exhausted, and not over 100 or 200 tons of varying gages could be found in San Francisco. One jobber says that he recently had an order for 1000 lb. of galvanized sheets of ordinary sizes and was unable to find it in the city.

**Wrought Pipe.**—During the past 10 days there has been less inquiry for wrought pipe than in any corresponding period on record. Outside of the demand in the shipyards, it is said that there was absolutely no demand during that time. The prospect that a large number of freight cars are to be built on this Coast in the near future is expected to create a considerable demand for wrought pipe.

**Cast-Iron Pipe.**—The Industrial Housing Commission is visiting Vallejo with the intention of providing homes there for several thousand workers at the Mare Island Navy Yard. Bids have already been called for for the construction of several hundred houses, including the necessary water pipes in the houses and to connect with the water mains. It is estimated that 500 or 600 tons of cast-iron pipe will be used in this work.

**Coke.**—Coke on old contracts continues to come in, and the general impression is that enough coke will come into this market to take care of the Government needs. No coke, however, is to be had except for strictly governmental purposes.

**Old Materials.**—The scrap situation is now pretty well in the hands of the Sub-Committee on Scrap Iron and Steel of the American Iron and Steel Institute.

Emory E. Smith is in charge on the Pacific Coast, as explained in THE IRON AGE recently. Prices on all scrap are strictly Government regulated. We quote:

| | |
|---|---|
| Scrap steel for cupola use | $34.00 |
| First grade cast iron (machinery, railroad, agricultural) | 34.00 |
| Second Grade (brake shoes) | 30.00 |
| Third Grade (clean broken stove plates) | 28.00 |
| Fourth Grade (grate bars, acid scrap free from burnt iron) | 20.00 |

## British Steel Market

### Pig-Iron Market Stringent—Bar Iron Prices Advanced—Canada Buys Ferromanganese

LONDON, ENGLAND, Aug. 21 (*By Cable*).

In pig iron conditions are generally stringent. In finished iron, unmarked bars are now £14 15s., with marked bars at £17 net. Tin plates are quoted at 33s. 6d. basis. For ferromanganese Canada has paid $260 to $265 c.i.f. Current quotations on various products are as follows:

Tin plate, coke, 14 x 20; 112 sheets, 108 lb., f.o.b. Wales, 33s. 6d.
Ferromanganese, $260 to $265, c.i.f. for export to America; £26 10s. for British consumption.
Ferrosilicon, 50 per cent. c.i.f., £35 upward.
On other products control prices per gross ton are:
Hematite pig iron, East Coast, £6 2s. 6d.; West Coast, £6 7s. 6d.
Cleveland pig iron (export), £5 5s. for No. 1 and £6 6s. for basic. Domestic prices, 6s. below these figures.
Steel plates, ship, bridge and tank, £11 10s. to £17, according to size.
S. M. boiler plates, basis, £12 10s.
Bar iron, standard quality, basis £14 15s.; marked £17, net.
Sheet and tin plate bars, £10 7s. 6d.
Blooms and billets for rerolling (ordinary), £10 7s. 6d.; special quality, £11.
Wire rods, £21 10s. net, basis.

## Philadelphia

PHILADELPHIA, Aug. 20.

Thought is being given by steel men to ways and means of increasing output to meet the increasing demands of the Government. The question arises as to whether it is better to take labor and material now for the construction of new blast furnaces and open-hearth furnaces so that a greater production of steel may be insured for next year, or to so curtail Government requirements that they will come within the limitations of present productive capacity. A meeting of steel manufacturers called by Judge Gary for Wednesday, Aug. 28, in New York has been called, it is believed here, to discuss this question.

There is some selling of foundry pig iron for the first half of next year, particularly by one large distributer. An inquiry of interest covers 10,000 tons of open-hearth or Bessemer soft steel rounds for shipment to Siberia, on which priority is said to be practically assured. Two plate mills in the East are concentrating for one week on plates for locomotives so that the locomotive building program of the Government may be speeded up.

**Pig Iron.**—A leading distributer has decided to sell for the first half of 1919, and has booked considerable business in foundry iron. Only consumers doing essential work are being taken care of in this way. A meeting of the makers of low phosphorus iron will be held in Washington to-day (Tuesday), and it is believed that a policy will be outlined for selling for next year. A majority of distributers and furnaces are not at present giving consideration to 1919 business, but consumers are becoming more urgent in requesting to have their requirements covered. We quote standard grades of iron f. o. b. furnace, except Virginia iron, for which the delivered prices are quoted.

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| Eastern Pennsylvania No. 1 X | $34.00 |
| Eastern Pennsylvania No. 2 X | 33.50 |
| Eastern Pennsylvania No. 2 foundry | 33.00 |
| Virginia No. 2 X (including freight) | 37.60 |
| Virginia No. 2 foundry (including freight) | 37.10 |
| Basic | 32.00 |
| Gray forge | 32.00 |
| Bessemer | 35.20 |
| Standard low phosphorus | 53.00 |
| Low phosphorus (copper bearings) | 50.00 |

**Coke.**—Blast furnaces and foundries continue to get fair shipments of coke, but there is not a sufficient supply from Connellsville to take care of all wants, and a number of furnaces now get by-product coke almost exclusively. The only objection to this is the price, as on the present basis the by-product coke costs about $1.70 a ton more for delivery in the Lehigh and Schuylkill valleys, due to the special ruling of the Fuel Administration permitting a higher price for by-product coke. The present price of $33 for foundry iron was agreed to by the furnace operators with the understanding that coke would be fixed at $6 a ton, Connellsville. Furnaces object to paying more unless there is a corresponding advance in the price of iron. We quote 48-hr. blast-furnace coke at $6, and 72-hr. foundry coke at $7, Connellsville.

**Ferroalloys.**—The McKinney Steel Co., Cleveland, is inquiring in this market for 6000 tons of spiegeleisen, 16 to 18 per cent, 18 to 22 per cent, or 35 to 40 per cent, for delivery over the first half of 1919. There is fair inquiry for ferromanganese and spiegeleisen. Prices are unchanged at $250 f.o.b. furnace, freight allowed, for 70 per cent ferromanganese, and $75 f.o.b. furnace for 16 to 18 per cent spiegeleisen.

**Billets.**—We quote open-hearth re-rolling billets at $51.30, Philadelphia.

**Tires.**—The French Commission is in the market for about 2500 tons of locomotive and car tires for shipment to France, and the Italian Commission wants a similar quantity. A number of producers are now submitting bids. So far as reported here, the Japanese Government has not yet bought the 33,000 tires for which it recently inquired.

**Plates.**—Steel shipbuilders in the Atlantic Coast district attended a conference Monday with Charles M. Schwab, Director General, and Charles Piez, general manager, of the Emergency Fleet Corporation, the object of which, as announced was to speed up production of steel ships in the East. It was said that the records achieved in the Western yards had not yet been attained in the East. For one week two large producers are giving precedence to plates for the locomotive companies on instructions from the Director of Steel Supply. We quote plates at 3.48c., Philadelphia.

**Structural Material.**—Bids were opened in Washington this week for new buildings at the Mare Island and Norfolk navy yards, involving several thousand tons of steel. We quote plain material at 3.23c., Philadelphia.

**Iron and Steel Bars.**—In view of the Allied intervention in Russia, an inquiry for 10,000 tons of soft steel bars, open-hearth or Bessemer, is of special interest. The inquiry comes from a Philadelphia exporting company, and calls for rounds of from ½ to 3 in. Steel companies were advised that priority is practically assured. Bar iron mills are well filled with Government orders. Several large plants are giving almost all of their product to the Emergency Fleet Corporation for the manufacture of chain. The shortage of borings and turnings has forced iron rolling mills to shut down for two or three days at a time during the past month, but conditions are expected to be improved by the embargo on shipments of borings and turnings to blast furnaces. We quote soft steel bars at 3.13c. and bar iron at 3.73c., Philadelphia.

**Sheets.**—One company recently shipped 2500 tons of high-carbon sheets to Japan. Jobbers are getting fair supplies on the basis of what they were accustomed to obtain during the first six months of the year. We quote No. 10 blue annealed sheets at 4.48c.; No. 28 black at 5.23c., and No. 28 galvanized at 6.48c., all Philadelphia.

**Old Material.**—The embargo on the shipment of borings and turnings to blast furnaces, except those making low phosphorus iron, is expected to produce shortly the desired result. In fact, in one instance several thousand tons of this material have been ordered shipped to an iron rolling mill which is working on important Government orders, and was threatened with a shutdown. An eastern Pennsylvania steel company is urgently in need of 10,000 tons of borings and turnings and the Sub-Committee on Scrap Iron and Steel will assist in obtaining them. Lower grades of

borings and turnings which the rolling mills will not accept may be shipped to blast furnaces if a permit is obtained from the scrap sub-committee, but any attempt to "doctor" first-class material so that it will be suitable only for blast furnaces will meet with retaliatory measures by the sub-committee, which has the power to prevent the issuance of railroad shipping permits where any suspicion attaches. A technical violation of the Government regulations as to sales of scrap has come to light, and will result in the cancellation of many contracts for so-called "unguaranteed" low-phosphorus scrap. It has developed that some scrap yards have been selecting the best of their heavy melting steel and classifying it as what is officially known as class C low-phosphorus material, obtaining $34 a ton for it. Thus the stocks of heavy melting steel are greatly impoverished, the quality being so poor in many instances that steel plants are finding difficulty in using the material shipped to them. Moreover, class C low-phosphorus scrap has been bought for use in basic open-hearth plants, although the regulations specifically state that its use is restricted to acid open-hearth plants. Consumers who have contracted for more of this grade of material than is needed for their acid open-hearth furnaces will be in danger of losing this supply. One company had contracted for enough low-phosphorus scrap to operate its single acid open-hearth furnace for three years. The Sub-Committee on Scrap Iron and Steel has issued permits for the shipment of cast scrap to the Pacific Coast to relieve a serious shortage there. A permit was recently issued for shipment of wrought scrap from the Chicago district to eastern Pennsylvania. No scrap for steel plants has been brought from Chicago to points farther east than Pittsburgh. We quote for delivery at buyers' yards in eastern Pennsylvania as follows:

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| No. 1 heavy melting steel | $29.00 |
| Steel rails, rerolling | 34.00 |
| No. 1 low phosphorus heavy, 0.04 and under | 39.00 |
| Low phosphorus, 0.04 and under | 36.50 |
| Low phosphorus, 0.06 and under | $32.00 to 34.00 |
| Old iron rails | 39.00 |
| Old carwheels | 29.00 |
| No. 1 railroad wrought | 34.00 |
| No. 1 yard wrought | 33.00 |
| Country yard wrought | 29.00 |
| No. 1 forge fire | $28.00 to 29.00 |
| Bundled skeleton | 28.00 to 29.00 |
| No. 1 busheling | 31.00 |
| No. 2 busheling | 17.00 to 18.00 |
| Turnings (for blast furnace use) | 18.50 to 19.00 |
| Machine-shop turnings (for rolling mill use) | 18.50 to 19.00 |
| Cast borings (for blast furnace use) | 18.50 to 19.00 |
| Cast borings (clean) | 19.00 |
| No. 1 cast (for steel plant use) | 29.00 |
| No. 1 cast (cupola sizes) | 34.00 |
| Grate bars | 27.50 to 28.50 |
| Stove plate | 28.00 to 29.00 |
| Railroad malleable (for steel plants) | 29.00 |
| Railroad malleable (for malleable works) | 34.00 |
| Wrought iron and soft steel pipes and tubes (new specifications) | 33.00 |
| Ungraded pipe | 29.00 |

## Cincinnati

CINCINNATI, Aug. 20—(*By Wire*).

**Pig Iron.**—Some quiet selling of Southern iron for first half of 1919 has been going on. None of this metal will go to a non-essential melter, but the furnace interests are not willing to see their old customers worry over the future, if they can avoid it. Of course it is known that the allocation of foundry iron is growing and that there may be some dislocation in contracts made, but the furnaces are determined to aid the authorities in distributing iron where most needed in the present stress. No free iron is to be had for this year's shipment, with the exception of some Southern off iron that comes to light occasionally. A local firm had yesterday 1000 tons of high sulphur iron for sale and this stayed on the market less than one hour, and in order to be fair to its customers, the tonnage had to be parceled out among a number of melters who were urgently in need of the metal. The status of the stovemakers is yet somewhat undetermined, but those not engaged in essential work will undoubtedly be cut off from any further shipments at an early date. The allocation of foundry iron is becoming more stringent and it will soon be in the same class as basic. Furnaces in southern Ohio have been called on lately to divert shipments more than the producers in the South. Practically all hope has been abandoned for an advance in prices for the last quarter, although it is rumored that some relief may be afforded a number of Southern furnaces reported to be operating over the cost line.

Based on freight rates of $3.60 from Birmingham and $1.50 from Ironton, we quote f.o.b. Cincinnati:

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|---|---|
| Southern coke, No. 2 foundry and No. 2 soft | $36.60 |
| Southern Ohio, No. 2 | 34.50 |
| Basic, Northern | 33.50 |

**Coke.**—The situation appears to be easing up somewhat, although the hot weather last week cut down production to a considerable extent. The foundries in this territory which are engaged on essential work are probably better supplied now than at any time within the past two years. This statement has been made both by a selling agency and a prominent foundryman and is borne out by reports from other sources. It may be that shipments will slow down this week on account of the lessened production last week, but stocks on hand are sufficient to carry consumers over until the slack can be taken up. Some contracts for foundry coke to be shipped next year are reported, but the tonnage involved is small. Most of the furnaces which have not already bought appear to be willing to let the future take care of itself, as they know they will be insured a supply of fuel when needed.

**Finished Material.**—Steel pipe, reinforcing concrete and plain bars, cold-rolled shafting and small structural shapes are all in good demand. Jobbers are able to fill orders in a limited way only, but are expecting relief next month, when it is understood that shipments will be made from the mills to replace stocks. On the subject of replenishing stocks, no one has any specific information as to whether the understanding between mills and the Government is correct. Cold-rolled shafting is urgently needed for essential work and it may be that some relief will be afforded on this commodity at an early date. There appears to be no trouble in the shipment of high-speed steel, and orders from machine-tool builders are heavy. The maximum price of $2 per lb. base is not at all times maintained, although only a few brands could be had below this figure. Wire nails cannot be obtained from stock.

The following are local jobbers' prices: Steel bars and small structural shapes, 4.13c. base; large rounds and squares 2 in. and over, 4.23c. base; plates, 4.48c. base; No. 10 blue annealed sheets, 5.48c.; steel bands, 3/16 in. and lighter, 4.98c. base (using the new band list). Reinforcing concrete bars, 4.23c., and wire nails, $4.25 to $4.50 per bag base.

**Old Material.**—As practically the only user of cast borings in this vicinity is out of the market, the price has weakened considerably. This class of scrap has to be shipped to the larger consuming districts where the freight rate is an important factor to be considered in making quotations. The steel mills are urgently in need of scrap that they can use, and the dealers are doing their utmost to fill orders received from this source. Steel turnings are firm at $14.50 per net ton. The following are dealers' prices f.o.b. at yards in carload lots:

*Per Gross Ton*

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|---|---|
| Bundled sheet scrap | $21.50 to $22.50 |
| Old iron rails | 33.50 to 34.00 |
| Relaying rails, 50 lb. and up | 44.50 to 45.00 |
| Rerolling steel rails | 32.00 to 32.50 |
| Heavy melting steel scrap | 27.50 to 28.00 |
| Steel rails for melting | 27.50 to 28.00 |
| Old carwheels | 29.00 to 29.50 |

*Per Net Ton*

| | |
|---|---|
| No. 1 railroad wrought | $29.50 to $30.00 |
| Cast borings | 13.50 to 14.00 |
| Steel turnings | 14.50 to 15.00 |
| Railroad cast | 25.00 to 25.50 |
| No. 1 machinery | 29.50 to 30.00 |
| Burnt scrap | 17.50 to 18.00 |
| Iron axles | 40.00 to 40.50 |
| Locomotive tires (smooth inside) | 35.50 to 36.00 |
| Pipes and flues | 21.00 to 21.50 |
| Malleable cast | 24.50 to 25.00 |
| Railroad tank and sheet | 18.50 to 19.00 |

## New York

NEW YORK, Aug. 20.

Pig Iron.—Although continual pressure is being brought to bear by consumers who want their requirements for the first half of 1919 covered, there has been no selling for that period reported in this market. Distributers are more concerned at present in hurrying up shipments, and in many instances delivery sheets show improvement over a few months ago. The coke situation is disturbing furnace operators. Although shipments at present keep fairly well apace of requirements, the furnaces are not able to accumulate stock piles and there is apprehension that the early days of winter, when transportation troubles begin, will bring a repetition of last winter's coke conditions. We quote prices as follows for tidewater delivery on Northern and Southern grades:

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| No. 1 X | $35.40 |
| No. 2 X | 34.00 |
| No. 2 plain | 33.90 |
| No. 2 X Virginia | 37.90 |
| No. 1 Southern (all rail) | 42.20 |
| No. 2 Southern (all rail) | 40.70 |

Ferroalloys.—There has not been as spontaneous a response as was expected to the suggestion of the Sub-Committee on Ferroalloys that consumers of manganese-iron alloys, particularly ferromanganese, cover their requirements as far ahead in 1919 as possible. There have been moderately large sales, however. For 1919 delivery one interest has sold a fair aggregate of small lots at $250, delivered, for 70 per cent alloy. For each unit above this level $4 is added and for each unit below, $4 is subtracted. For delivery in 1918 another interest has sold 1300 tons of domestic alloy at $250 for 70 per cent plus only $3.50 per unit above the standard. No large inquiries are noted. A representative of a British maker has sold 200 tons for delivery this year, subject to import license. The British alloy is quoted at a minimum of $260, seaboard, for 76 to 80 per cent material. Practically all of the 12,000 tons of British alloy arranged for importation a few weeks ago has been shipped from the other side and received. Spiegeleisen is quiet but scarce, and it is believed that any marked demand would result in difficulty in securing offerings. A sale of 1500 tons is reported and one large steel company in Ohio is asking for 6000 tons for delivery in 1919, first half. The order can be filled with 16 to 18 per cent or 18 to 22 per cent alloy or even 30 to 35 per cent material in part or in whole. The quotation remains firm at $75, furnace, for 16 per cent alloy plus $3.50 per unit above this level. Ferrosilicon, 50 per cent, is quiet at $152.50 per ton on contracts involving several hundred tons; $157.50 on 100-ton lots, and $162.50 on carloads. So far there have been only two or three inquiries for delivery in 1919. One large producer will not open its books for 1919 until October. This company is obtaining $170, f.o.b. plant, for 50 per cent ferrosilicon for delivery the balance of this year. For 10 to 12 per cent electrolytic ferrosilicon, low in phosphorus, this company is obtaining $95 per ton, f.o.b. plant, and is sold up until October. An interesting development is the reported production of 50 per cent ferrosilicon by a large steel company in the Pittsburgh district. Whether this is to be in sufficient quantity to supply the needs of this company does not appear. It is understood the same company is also to make electrodes.

Finished Iron and Steel.—For the American Expeditionary Forces in France 20,000 more cars have been ordered, but at this writing the distribution has not been made. Purchases in behalf of Italy for rolling stock are expected and possibly also for Japan. An interesting development in the effort to get immediate rolling of the 82-mm. rounds for shells is that wire makers have been asked to turn out the shellbars on their billet mills. Jobbers are striving to get a better than B-4 rating for replacement of material shipped on war and preference lists. Those jobbers who have put through orders for August on the basis of first half year monthly average are not getting material very satisfactorily because of the B-4 priority and this is likewise true of any jobber who is trying to replace only his July shipments on essential projects. Only one bid was received in the East on the 6200-ton structural job for the Mare Island Navy Yard, but about three were received on the Pacific Coast and one of these is the lowest, namely that of the Clinton Construction Co. for $1,586,000. On the 1900-ton storage shed at Norfolk the Austin Co. was low bidder. Some of the new work which has appeared includes 600 tons for an addition to the boiler house of the Baltimore electric lighting company and 400 tons for a machine shop at the Mare Island yard. Awards include 250 tons for three bridges for the New York Central to the American Bridge Co.; 800 tons for three transfer bridges for the Army supply base, Brooklyn, to the Levering & Garrigues Co.; 500 tons for a piershed for the New York Dock Co., Brooklyn, to the McClintic-Marshall Co., and 1100 tons for a number of bridges, crane runway, signal tower, etc., for the Pennsylvania Railroad, to fabricators whose names are not available at this writing. A large tonnage of concrete reinforcing bars is wanted by the Emergency Fleet Corporation. We quote mill shipments as follows: Steel bars, 3.145c.; shapes, 3.245c.; plates, 3.495c.; and bar iron, 3.745c., all New York. Out-of-store prices are 1c. higher.

Cast-Iron Pipe.—Makers of cast-iron pipe are engaged to a large extent on Government work such as housing operations. Municipalities are ordering only such small lots as are required for urgent repairs. Despite the assurance of the Director of Steel Supply that adequate supplies of pig iron will be furnished to cast-iron pipe foundries, shipments are not yet up to requirements. Government prices, including the new freight rates, are as follows: $61.75, New York, for 6-in. and heavier; and $64.75 for 4-in.; $71.75 for 3-in., with $1 additional for Class A and gas pipe.

Old Material.—There is an urgent demand from nearby foundries for stove plate, grate bars and No. 2 cast scrap, for which the maximum price, $29, delivered, is now being freely paid, plus a 3½ per cent commission to dealers or brokers. All grades of scrap are eagerly snapped up by consumers whenever offered, and maximum Government prices are ruling in nearly all sales. Dealers will pay the maximum prices for supplies, depending upon the commission for their profit. We quote prices of brokers to New York producers and dealers per gross ton New York as follows:

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| Heavy melting steel | $26.20 |
| Rerolling rails | 30.80 |
| Relaying rails | $60.00 to 70.00 |
| Iron and steel car axles | 43.70 |
| No. 1 railroad wrought | 30.80 |
| No. 1 railroad wrought, cut to not less than 10 in. or over 24 in. | 35.80 |
| Wrought-iron track scrap | 28.80 |
| Forge fire | 25.00 to 25.50 |
| No. 1 yard wrought, long | 29.80 |
| Light iron | 10.00 to 11.00 |
| Cast borings (clean) | 16.25 to 16.50 |
| Machine-shop turnings | 16.25 to 16.50 |
| Mixed borings and turnings | 16.25 to 16.50 |
| Iron and steel pipe (1 in. minimum diameter), not under 2 ft. long | 29.80 |
| Stove plate | 26.20 |
| Locomotive grate bars | 26.20 |
| Malleable cast (railroad) | 31.20 |
| Old carwheels | 26.20 |

Prices which dealers in New York and Brooklyn are quoting to local foundries, per gross ton, are:

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| No. 1 machinery cast | 34.00 |
| No. 1 heavy cast (columns, building materials, etc.), cupola size | 34.00 |
| No. 1 heavy cast, not cupola size | 29.00 |
| No. 1 cast (radiators, cast boilers, etc.) | 29.00 |

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Mattie furnace of the A. M. Byers Co., Girard, Ohio, blown out on June 30 for relining and repairs, is expected to be put in blast early in September. The stack and stoves were relined and replated, a Brassert gas washer was installed, also four Rust water tube boilers. The capacity of the stack will be increased about 20 per cent, and it is expected to make about 400 tons of iron per day, after it starts. The stack runs on mill iron, which is used in the puddling furnace of the company at Girard.

## Cleveland

CLEVELAND, Aug. 20.

**Iron Ore.**—Many Lake boats have been diverted from the ore trade to carry grain from Lake Michigan ports during the past few days, and it is expected that a large amount of additional vessel tonnage will be diverted from the ore trade early next month for moving grain from Lake Superior ports. The ore movement during the past week has been checked by a car shortage that has been more serious than at any previous time this season and lack of sufficient motive power. Receipts at Lake Erie ports are heavy and in many cases boats have been held in ports three or four days awaiting cars. With fewer vessels handling ore and the delays that have been caused, August shipments probably will not reach the record-breaking movement of July. We quote, f.o.b., lower Lake docks, as follows:

Old range Bessemer, $6.40; old range non-Bessemer, $5.65; Mesaba Bessemer, $6.15; Mesaba non-Bessemer, $5.50.

**Coke.**—There is a great deal of inquiry in the Cleveland territory for either Connellsville or by-product foundry coke, but producers are sold up and none is to be had from either source of supply. Foundries apparently have a sufficient supply at present, but desire to stock up. Cleveland by-product coke is now quoted at $9 27 per net ton instead of $9.20, producers being allowed to add 7c., this being the amount of the war tax on freight shipments from the Connellsville district.

**Pig Iron.**—Many foundries in Cleveland and vicinity working on direct or indirect Government orders have had their supply of pig iron cut off by the turning from foundry to basic iron of the only blast furnace of a Cleveland steel works that has been operating on foundry iron, the change to basic being due to the recent taking of 100,000 tons of the English order for basic iron by this interest. This furnace has been making 500 tons of iron a day, and it is not expected that it will go back to foundry iron before Nov. 1 at the earliest and then only if the company has not been allocated additional steel-making iron, so that a shortage of approximately 50,000 tons of foundry iron has been created. Cleveland foundrymen have appealed to Washington for relief, and it is possible that Virginia producers will be directed by the Government to supply the foundry iron to cover the shortage in the Cleveland territory. Foundries' stocks are low, as furnaces have not shipped them iron faster than actually needed for some time, and unless iron from other territories is supplied promptly, a serious situation is threatened. Allocations by the pig iron committee fell off somewhat during the past week. These amounted to 41,500 tons, making 754,500 tons allocated by the committee since May 1. The allocations included 21,000 tons of basic, 10,000 tons of Bessemer and 7500 tons of foundry iron. Many new requests for allocations were received by the committee during the week. The new form of monthly report that the War Industries Board has directed to take the place of the weekly report that has been filled out for some time by pig iron producers has been prepared and will be sent to the furnaces within a day or two. Somewhat more detailed information will be required in the monthly report than was provided for in the weekly report now in use. Foundry and malleable iron will be classified under separate headings instead of combined as at present, and a column has been provided for listing charcoal iron separately. Furnaces will report tonnages on their books, not only for the remainder of 1918, but for delivery after Dec. 31, 1918. The producers are directed to mail their reports on or before the tenth of every month for the previous calendar month, sending duplicate copies to J. Leonard Replogle, Director of Steel Supply, and H. G. Dalton, Chairman of the Sub-Committee on Pig Iron. Furnaces must secure from their consumers the necessary data for filling out the reports. In case a consumer does not report in time, his tonnage will be tabulated in the report under "less essential" requirements. There is still a great deal of inquiry for pig iron for 1919 delivery, nearly all in foundry grades, but producers are accepting orders sparingly, and only subject to their ability to fill after supplying the more direct demands of the Government. There is a great deal of inquiry for Southern iron for next year, but producers are declining to accept orders. Some off Southern iron is being offered and is quickly picked up. Plans for the allocation of charcoal pig iron by the producers of Northern charcoal iron who will act as a subcommittee under the pig iron committee of the American Iron and Steel Institute will be placed in effect shortly. William Gerhauser of the Superior Charcoal Iron Co. and F. W. Hutchings of the Charcoal Iron Co. of America, representing the Northern charcoal iron producers, held a conference in Washington Tuesday with Director Replogle and J. C. McLaughlin and will make a report at a meeting of the Northern producers to be held in Cleveland, probably Wednesday, during which a permanent organization will be effected. The Northern charcoal iron producers plan to hold weekly meetings either in Cleveland, Detroit or Grand Rapids to make allocations. We quote delivered prices, Cleveland, as follows:

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| Bessemer | $36.60 |
| Basic | 33.40 |
| Northern No. 2 foundry | 33.40 |
| Southern No. 2 foundry | 38.00 |
| Gray forge | 32.40 |
| Ohio silvery, 8 per cent silicon | 47.90 |
| Standard low phosphorus, Valley furnace | 53.00 |

**Finished Iron and Steel.**—The demand for shell discard is far in excess of the supply, but the amount available is helping the jobbers materially in replenishing their stocks. One Cleveland jobber has just purchased 1000 tons of channels to be rolled from discard by a Pittsburgh district mill and a Cleveland steel plant, which has most of its discard under contract, was able to sell some surplus tonnage during the week in the form of billets which brought the regular Government price. Consumers are having more difficulty in securing material than ever, as some sellers are complying with the Government regulations to the letter and will not sell a pound of material even out of warehouse without an affidavit showing for what purpose it is to be used. New inquiries for material for Government work include 2000 tons of open-hearth bars for exhaust valves for airplane motors, and it is understood that an Ohio mill will furnish a round tonnage of forging bars for crank shafts for these motors. Another inquiry is for 300 tons of billets and bars for machine guns. New inquiry for plates is light, but local plate mills have all the Government orders they can fill for some time. The Government has asked for bids for six barges that will require 3000 tons of plates. Cleveland sales agents have received no official information as to the reported $5 a ton concession made to the implement trade on steel bars and objection to any concession to this trade is general. There is a considerable demand from railroads for bars and small angles for repair work which some of the mills are taking care of. Sheet mills are supplying the jobbing trade to the extent permitted by the Government, or one-sixth of their sales during the past six months.

Steel bars, 4.07c.; plates, 4.42c.; structural material, 4.17c. No. 10 blue annealed sheets, 5.42c.; No. 28 black sheets 6.42c.; No. 28 galvanized sheets, 7.67c.

**Bolts, Nuts and Rivets.**—The output of bolt and nut plants is being materially curtailed by their inability to secure raw material, particularly wire. Their supply of wire has been restricted by the Government to 40 to 50 per cent of their usual consumption, and this is resulting in a corresponding curtailment in their production of cold-rolled bolts in ⅜-in. sizes and smaller. The demand for bolts and nuts continues very heavy. The Quartermaster's Department has sent a representative to France to check up the stores of bolts and nuts in the supply depots of that country. After this check is completed, it is expected that a large order for bolts and nuts for this department will be placed. Some time ago the Quartermaster's Department sent an inquiry out for 129,000,000 bolts and nuts, but placed only 25 per cent of this order. The order for 6500 tons of rivets for the Hog Island shipyard has been divided

among four or five manufacturers. A large number of orders are coming out in lots of 200 to 300 tons. The Government has temporarily cut down the supply of steel bars for rivet manufacturers about 25 per cent, but this curtailment is not interfering with production, as rivet plants have good stocks. Production in Cleveland plants is being curtailed somewhat by the scarcity of labor.

Old Material.—There is little activity in the scrap market. Although the scarcity continues, mills generally are fairly well supplied. However, dealers have no difficulty in making sales when they can secure material. Prices are firmer on grades that have been below the Government maximum. Sales of No. 1 busheling are reported at $31 plus the commission, and some dealers are asking $34, the Government maximum, for cupola cast scrap. Two sales of 2000 tons each of low phosphorus melting scrap to a local consumer are reported. Borings and turnings are in good demand and are held at the Government price. We quote, delivered consumers' yards in Cleveland and vicinity, as follows:

*Per Gross Ton*

| | |
|---|---|
| Steel rails | $28.00 to $29.00 |
| Steel rails, under 3 ft | 34.00 |
| Steel rails, rerolling | 34.00 |
| Iron rails | 39.00 |
| Iron car axles | 46.50 |
| Steel car axles | 46.50 |
| Heavy melting steel | 29.00 |
| Cast borings | 18.50 to 19.00 |
| Iron and steel turnings and drillings | 18.50 to 19.00 |
| Hydraulic compressed sheet scrap | 28.00 to 29.00 |
| No. 1 railroad wrought | 34.00 |
| Cast-iron car wheels, unbroken | 29.00 |
| Cast-iron car wheels, broken | 34.00 |
| Agricultural malleable | 29.00 to 30.00 |
| Railroad malleable | 34.00 |
| Steel axle turnings | 24.00 |
| Light bundled sheet scrap | 24.50 to 25.00 |
| Cast-iron scrap | 29.00 |
| Cast-iron scrap, broken to cupola size | 33.00 to 34.00 |
| No. 1 busheling | 30.00 to 31.00 |

*Per Net Ton*

| | |
|---|---|
| Railroad grate bars | $23.00 to $24.00 |
| Stove plate | 23.00 to 24.00 |

## An Asbestos Mixture for Foundry Molds

A material for making molds for ferrous and nonferrous foundry work, made from amphibole asbestos mixed by a secret formula with actinolite, has been offered to the Council of National Defense by William M. Hoffman, 26 Gallatin Street, Buffalo, for use at cost in Government work. The inventor retains the right to keep the secret of the mixture. Actinolite is a silicate of calcium, magnesium and iron. It is stated that the material has been tested at the plants of the Aluminum Castings Co. at Buffalo and the National Fire Proofing Co., and by the Carnegie Institute of Technology, Pittsburgh. It is claimed that the material can be used ten times in the one day and for an indefinite number of days.

"Sweden-America" is the title of a pamphlet of 144 pages issued as a year book of the Swedish Chamber of Commerce in the United States, Produce Exchange Annex, New York. It contains a number of articles by Swedish-Americans and others dealing with features of the trade relations between Sweden and the United States, the object being to increase existing commerce to the advantage of both countries. Considerable space is given to the annual report of the Swedish Chamber of Commerce of the United States, of which Oscar G. Marell is general manager. Referring to the development of the ball bearings industry in Sweden it is stated that five new companies have started within recent years. Exports of ball bearings to the United States amounted to $321,885 in 1913, to $1,004,345 in 1915, and to $1,377,974 in 1916. Among other important articles exported to the United States are mentioned incandescent oil lamps, petroleum stoves, gas accumulators, steam turbines, motors and dynamos.

# IRON AND INDUSTRIAL STOCKS

## Tight Money and Absence of Public Interest Still Dominates the Situation, Resulting in a Quiet but Firm Market

NEW YORK, Aug. 19.

The market as a whole has been quiet with price movements within a narrow range. There are or have been two controlling factors in the situation—tight money and abstention by the public from almost any interest in speculation. Early in the week covered by this review there was a little activity in the railroad stocks, but this soon died out and for the rest of the period the market has been almost at a standstill. The only feature has been the gradual advance in the price of the Liberty 3½ per cent bonds, which rose yesterday to the highest level reached since they were traded in some 18 months ago, above 101.50. The outlook for active speculation is poor. There is a distinct tendency on the part of those controlling money to withhold credit from non-essential uses and this is gaining in force. Stock speculation is regarded as non-essential. A dull market and a narrow one is the probability for some time.

Among steel stocks there was very little change in price levels but the undertone was strong. United States Steel common ruled closely around 110⅛ to 112⅞ with the other steel stocks similarly affected.

The range of prices on active iron and industrial stocks from Tuesday of last week to Wednesday of this week was as follows:

| | | | |
|---|---|---|---|
| Allis-Chalmers,co. | 33⅜- 54 | Int. Har. Corp. com. | 64½- 65 |
| Allis-Chalmers,pf. | 83¼- 84 | Lackawanna St.. | 84½- 84⅞ |
| Am. Can com... | 46¼- 47½ | Lake Su. Corp.. | 19¼- 20¼ |
| Am. Can pf..... | 93 - 94 | Midvale Steel .. | 52½- 54 |
| Am. Car & Fdry. com. | 84¼- 85¼ | Nat.-Acme ..... | 31¾- 32 |
| pf. | 107⅝-107¾ | Nat. Enam. & Stm. com. | 51½- 52 |
| Am. Loco. com.. | 66¾- 67⅝ | Nova Scotia St.. | 65 - 69 |
| Am. Loco. pf..... | 99 | Pressed St. com. | 68¼- 70 |
| Am. Ship, com.. | 123 -124½ | Pressed St. pf..... | 98 |
| Am. Ship, pf.... | 88 - 89 | Ry. St. Sp. com.. | 61⅜- 62¼ |
| Am. Steel Fdries. | 72 - 75¼ | Ry. St. Sp. pf... | 100⅞-101 |
| Bald. Loco. com.. | 92¾- 96⅜ | Republic, com... | 91¼- 93¼ |
| Beth. Steel, com. | 83¾ | Republic, pf. | 101½ |
| Beth Steel, cl. B. | 82¾- 84⅞ | Sloss, com. ..... | 61 - 61⅝ |
| Cambria Steel ..... | 130 | Superior Steel .. | 42¾- 43 |
| Case (J. I.) pf..... | 83½ | Un. Alloy St.... | 38 - 39½ |
| Chic. Pneu. Tool | 68 - 69 | U. S. Pipe, com. | 14 |
| Colo. Fuel ..... | 46¼- 47½ | U. S. Steel, com. | 110¼-112⅝ |
| Crucible St. com. | 67½- 69¾ | U. S. Steel, pf... | 110¼-110¾ |
| Deere & Co. pf.. | 92½- 94¼ | Va. I. C. & Coke. | 73 |
| Gen. Electric ... | 145¾-147¼ | Westinghouse El. | 42½- 44⅝ |
| Gt. No. Ore Cert. | 31¾- 32¼ | | |
| Gulf States St.. | 83½- 85½ | | |
| Int. Har. of N. J. com. | 125½-128 | | |

## Dividends

The American Locomotive Co., quarterly, 1¼ per cent on the common, payable Oct. 3, and 1¾ per cent on the preferred, payable Oct. 21.

The Brier Hill Steel Co., quarterly, 1½ per cent and extra 3½ per cent on the common and 1¾ per cent on the preferred, all payable Oct. 1.

The Cambria Steel Co., quarterly, 75c. and extra 75c., payable Sept. 14.

The Dominion Iron & Steel Co., Ltd., 3½ per cent, payable Oct. 1.

The Dominion Steel Corporation, quarterly, 1¼ per cent on the common, payable Oct. 1.

The Niles-Bement-Pond Co., quarterly, 3 per cent on the common, payable Sept. 20 and 1½ per cent on the preferred, payable Aug. 20.

The Pratt & Whitney Co., quarterly, 1½ per cent, payable Aug. 20.

The Railway Steel Spring Co., quarterly, 1¼ per cent on the preferred, payable Sept. 30, and 1¾ per cent on the preferred, payable Sept. 20.

The Studebaker Corporation, quarterly, 1 per cent on the common, and 1¾ per cent on the preferred, payable Aug. 31.

## To Finance New Plant

The special meeting of the Laclede Gaslight Co., at St. Louis, Sept. 10, called to consider an increase of $20,000,000 in the capital stock, will consider three propositions. One is to increase the common stock from $17,500,000 to $37,500,000, the preferred issue of

$2,500,000 being continued in existence. The second is to authorize an increase in the bonded debt of the company, now $20,000,000, to such sum as may be needed not in excess of the total capital stock. The third is an authorization of refunding of outstanding issues in accordance with whatever plan of increase of capital is finally approved. The increase of capital is not only for the purpose of reorganizing the finances of the company, but also to supply capital for the large shell manufacturing plant which is to be established near the toluol by-product plant now operated by the company in connection with its gasmaking.

## Bethlehem Steel Activities

At a special meeting of stockholders of the Bethlehem Steel Corporation held recently, the creation of a new $500,000,000 mortgage was approved as was also the pledging of $70,000,000 of bonds under this mortgage in connection with the $50,000,000 7 per cent notes by the Corporation. The new mortgage to secure the issuance of bonds not to exceed $500,000,000 covers all the properties and assets of the Bethlehem Steel Corporation.

Eugene G. Grace, president of the corporation, stated that the gross business this year will approximate $400,000,000 and that the total in 1919 would probably be nearly $500,000,000. At the present time, the corporation is working on orders amounting to about $650,000,000. Mr. Grace said that the greatest possible production is being turned out, but the excessive heat has caused operations to be slowed up a bit. The corporation now has 120,000 employees of whom 65,000 are employed in the various shipyards. Mr. Grace said that by Oct. 1 about 5000 more men would be engaged in the shipyards. He said that approximately $22,000,000 had been expended to date at the Sparrows Point plant and about $20,000,000 more will be needed to complete the new construction.

## Railway Steel Spring Bonds

The Railway Steel Spring Co., whose bonded debt was $6,628,000 at the end of 1914, has applied its earnings in the recent prosperous years to the elimination of the whole amount. All the outstanding issue of 5 per cent bonds of the Inter-Ocean plant has been called for retirement at 105 on October 1.

## Industrial Finances

Suit was filed in Louisville during the week by the First National Bank and Fidelity & Columbia Trust Co., to close up the affairs of the M. A. Sweeney Shipyard & Foundry Co., at Jeffersonville, Ind. At the present time the plant has some Government orders, but lacks financial strength to go ahead.

The Main Belting Co., Philadelphia, has called a special meeting of stockholders on Oct. 8 to vote on an increase in its capital from $100,000 to $1,300,000. The increase will be divided into $600,000 6 per cent cumulative stock, and $600,000 common stock.

The Amalgamated Machinery Corporation, 71 Broadway, New York, has filed notice of dissolution of the corporation.

The Pierce-Arrow Motor Car Co.'s net earnings for the second quarter of the current year were $1,523,421, which compares with $1,303,376 for the corresponding period of last year, an increase of $220,045. Interest, depreciation and taxes totalled $609,392, leaving a surplus for the quarter of $914,029.

It is estimated that the Westinghouse Electric & Mfg. Co., in the three months ending June 30, the first quarter of its fiscal year, earned net income of $5,200,000 after all charges excepting taxes. This was an increase of $1,600,000 over the showing in the corresponding quarter of the preceding year. After allowance of full dividends on the preferred and common stocks, which share alike, and a 100 per cent greater set-up for taxes than in June quarter of 1917, a balance of $1,000,000 was carried to surplus. Quarterly dividend requirements on the $74,812,650 capital stock amounted to $1,309,220. Adding this sum to the balance carried to surplus and deducting the total from net income before taxes, the reservation for taxes is shown to have been $2,890,780, and the balance available for dividends after taxes to have been equal to $3.08 per share, or at the annual rate of $12.32 per share, compared with $10.29 per share earned in the fiscal year ended March 31, 1918. This high rate of earnings despite the burden of war taxation is a reflection of the heavy business which is absorbing the full capacity of the company's plants. As of March 31, 1918, unfilled orders aggregated $147,857,580, inclusive of war contracts. Of this total $110,185,087 comprised orders for the corporation's regular products, but the proportion of plant capacity at present being devoted to Government work is understood to be above 60 per cent.

## Book Reviews

**Sheet Metal Workers' Manual.** By L. Broemel and J. S. Daugherty. Pages, 552, 4½ x 6¾ in.; illustrations, 394 and tables, 30. Published by Frederick J. Drake & Co., 1006 Michigan Avenue, Chicago. Price, $2.

The book is designed to give a comprehensive description of the machinery, tools and methods employed in sheet metal working together with a course in practical sheet metal pattern drafting in text form. It is available for use as a textbook in manual training and technical schools. Welding by hand and by the oxy-acetylene and electric processes is covered, as well as hand forging and oxy-acetylene cutting. Brazing, pipe bending and the properties of metals and their alloys also receive considerable attention. Brief emergency war training courses in sheet metal working and hand forging and welding are also outlined.

The course in drafting is arranged in such a sequence that the processes and machine operations are reviewed with each new problem and many of these are only partly solved, thus compelling the student to develop his reasoning powers as well as his ability to draw. A section of 34 pages on practical geometry and mensuration is included.

**Essentials of Sheet Metal Work and Pattern Drafting.** By James S. Daugherty. Pages, 181, 4½ x 7½ in.; illustrations, 149. Published by Frederick J. Drake & Co., 1006 Michigan Avenue, Chicago. Price, $1.50.

This book is offered as an elementary and advanced course for vocational and trade school students and apprentices as well as for the use of sheet metal workers and contractors and instructors in grade and high schools where a course in sheet metal work forms a part of the regular school curriculum. The problems are presented in such sequence that each new one reviews the processes and machine operations involved, and the course follows the lines of the best shop methods based upon the author's experience as an instructor and also as a practical sheet metal worker.

After describing the transferring of patterns to metal, the cutting of patterns and templates is gone into. The various operations of folding edges, seaming, forming, grooving, crimping, soldering, wiring, notching, peening and raising are taken up in order and in addition to the illustrations of the problems themselves, views of the machinery and tools required supplement the text. Radial and parallel line developments receive attention as well as the subjects of pipe intersections, T-joints, elbows and miters.

The New Standard Hardware Works, Mount Joy, Pa., is installing a tinning plant, including the process for the hot tinning of steel stampings, for the Buhl Stamping Co., Detroit. Another installation, including the unit system and process, will be made at the plant of the National Enameling & Stamping Co. at Milwaukee, Wis.

# Prices Finished Iron and Steel, f.o.b. Pittsburgh

An advance in freight rates of 25 per cent from Pittsburgh on finished iron and steel products, including wrought iron and steel pipe, went into effect June 25, 1918. The rates from Pittsburgh, in carloads, to points named, per 100 lb. are as follows: New York, 24.5c.; Philadelphia, 23c.; Boston, 27c.; Buffalo, 17c.; Cleveland, 14c.; Cincinnati, 23c.; Indianapolis, 25c.; Chicago, 27c.; St. Louis, 34c.; Kansas City, 59c.; St. Paul, 49½c.; Denver, 99c.; Omaha, 59c.; minimum carload, 36,000 lb. to four last named points; New Orleans, 38.5c.; Birmingham, 57.5c.; Pacific Coast, $1.25; minimum carload, 80,000 lb. To the Pacific Coast the rate on steel bars and structural steel is $1.315, minimum carload 40,000 lb.; and $1.25, minimum carload 50,000 lb. On wrought iron and steel pipe the rate from Pittsburgh to Kansas City is 50c. per 100 lb., minimum carload 46,000 lb.; to Omaha, 50c., minimum carload 46,000 lb.; to St. Paul and Minneapolis, 49.5c., minimum carload 46,000 lb.; Denver, 99c., minimum carload 46,000 lb. A 3 per cent transportation tax applies. On iron and steel items not noted above, rates vary somewhat and are given in detail in the regular railroad tariffs.

## Structural Material

I-beams, 3 to 15 in.; channels, 3 to 15 in. angles, 3 to 6 in. on one or both legs, ¼ in. thick and over, and zees, structural sizes, 3c.

## Wire Products

Wire nails, $3.50 base per keg; galvanized, 1 in. and longer, including large-head barb roofing nails taking an advance over this price of $2, and shorter than 1 in., $2.50. Bright basic wire, $3.35 per 100 lb.; annealed fence wire, Nos. 6 to 9, $3.25; galvanized wire, $3.95; galvanized barb wire and fence staples, $4.35; painted barb wire, $3.65; polished fence staples, $3.65; cement-coated nails, $3.40 base; these prices being subject to the usual advances for the smaller trade, all f.o.b. Pittsburgh, freight added to point of delivery, terms 60 days net, less 2 per cent off for cash in 10 days. Discounts on woven-wire fencing are 47 per cent off list for carload lots, 46 per cent for 1000-rod lots, and 45 per cent off for small lots, f.o.b. Pittsburgh.

## Bolts, Nuts and Rivets

Large structural and ship rivets.....$4.40 base
Large boiler rivets.....$4.50
7/16 in. x 6 in. smaller and shorter rivets..50-10 per cent off list
Machine bolts h.p. nuts, ⅜ in. x 4 in.:
Smaller and shorter, rolled threads....50-10-5 per cent off list
Cut threads.....50-5 per cent off list
Larger and longer sizes.....40-10 per cent off list
Machine bolts, c.p.c. and t. nuts, ⅜ in. x 4 in.:
Smaller and shorter.....40-10 per cent off list
Larger and longer.....35-5 per cent off list
Carriage bolts, ⅜ x 6 in.:
Smaller and shorter, rolled threads.....50-5 per cent off list
Cut threads.....40-10-5 per cent off list
Larger and longer sizes.....40 per cent off list
Lag bolts.....50-10 per cent off list
Plow bolts, Nos. 1, 2, 3.....50 per cent off list
Hot pressed nuts, sq., blank.....2.50c. per lb. off list
Hot pressed nuts, hex., blank.....2.30c. per lb. off list
Hot pressed nuts, sq., tapped.....2.30c. per lb. off list
Hot pressed nuts, hex., tapped.....2.10c. per lb. off list
C.p.c. and t. sq. and hex. nuts, blank.....2.25c. per lb. off list
C.p.c. and t. sq. and hex. nuts, tapped.....2.00c. per lb. off list
Semi-finished hex. nuts:
⅜ in. and larger.....60-10-10 per cent off list
7/16 in. and smaller.....70-5 per cent off list
Stove bolts.....70-10 per cent off list
Stove bolts.....2½ per cent extra for bulk
Tire bolts.....50-10-5 per cent off list

The above discounts are from present lists now in effect. All prices carry standard extras.

## Wire Rods

No. 5 common basic or Bessemer rods to domestic consumers, $57; chain rods, $65; screw, rivet and bolt rods and other rods of that character, $65. Prices on high carbon rods are irregular. They range from $70 to $80, depending on carbons.

## Railroad Spikes and Track Bolts

Railroad spikes, 9/16 in. x 4½ in. and heavier, per 100 lb., $3.90, in lots of 200 kegs of 200 lb. each, or more; track bolts, $4.90. Boat spikes, $5.25 per 100 lb., f.o.b. Pittsburgh.

## Terne Plate

Effective May 21 prices on all sizes of terne plates are as follows: 8-lb. coating, 200 lb., $15 per package; 8-lb. coating, I. C., $15.30; 12-lb. coating, I. C., $17.00; 15-lb. coating, I. C., $18.00; 20-lb. coating, I. C., $19.60; 25-lb. coating, I. C., $20.60; 30-lb. coating, I. C., $21.75; 35-lb. coating, I. C., $22.75; 40-lb. coating, I. C., $24.00 per package, all f.o.b. Pittsburgh, freight added to point of delivery.

## Iron and Steel Bars

Steel bars at 2.90c. from mill. Refined iron bars, 3.50c. in carload and larger lots, f.o.b. mill.

## Wrought Pipe

The following discounts are to jobbers for carload lots on the Pittsburgh basing card, as announced Nov. 5 by the Government on steel pipe, those on iron pipe being the same as quoted for some time:

*Butt Weld*

| Steel | | | Iron | | |
|---|---|---|---|---|---|
| Inches | Black | Galv. | Inches | Black | Galv. |
| ⅛, ¼ and ⅜ | 44 | 17½ | ⅛ and ¼ | 23 | +4 |
| ½ | 48 | 33½ | ⅜ | 24 | +3 |
| ¾ to 3 | 51 | 37½ | ½ | 28 | 10 |
| | | | ¾ to 1½ | 33 | 17 |

*Lap Weld*

| | | | | | |
|---|---|---|---|---|---|
| 2 | 44 | 31½ | 1¼ | 18 | 3 |
| 2½ to 6 | 47 | 34½ | 1½ | 25 | 11 |
| 7 to 12 | 44 | 30½ | 2 | 26 | 12 |
| 13 and 14 | 34½ | .. | 2½ to 6 | 28 | 15 |
| 15 | 32 | .. | 7 to 12 | 25 | 12 |

*Butt Weld, extra strong, plain ends*

| | | | | | |
|---|---|---|---|---|---|
| ⅛, ¼ and ⅜ | 40 | 22½ | ⅛, ¼ and ⅜ | 22 | 5 |
| ½ | 45 | 32½ | ½ | 27 | 14 |
| ¾ to 1½ | 49 | 36½ | ¾ to 1½ | 33 | 18 |
| 2 to 3 | 50 | 37½ | | | |

*Lap Weld, extra strong, plain ends*

| | | | | | |
|---|---|---|---|---|---|
| 2 | 42 | 30½ | 1¼ | 19 | 4 |
| 2½ to 4 | 45 | 33½ | 1½ | 25 | 11 |
| 4½ to 6 | 44 | 32½ | 2 | 27 | 14 |
| 7 to 8 | 40 | 26½ | 2½ to 4 | 29 | 17 |
| 9 to 12 | 35 | 21½ | 4½ to 6 | 28 | 16 |
| | | | 7 to 8 | 20 | 8 |
| | | | 9 to 12 | 15 | 3 |

To the large jobbing trade an additional 5 per cent is allowed over the above discounts, which are subject to the usual variations in weight of 5 per cent. Prices for less than carloads are four (4) points lower basing (higher price) than the above discounts on black and 5½ points on galvanized.

On butt and lap weld sizes of black iron pipe, discounts for less than carload lots to jobbers are seven (7) points lower (higher price) than carload lots, and on butt and lap weld galvanized iron pipe are nine (9) points lower (higher price).

## Boiler Tubes

The following are the prices for carload lots, f.o.b. Pittsburgh, announced Nov. 13, as agreed upon by manufacturers and the Government:

| *Lap Welded Steel* | | *Charcoal Iron* | |
|---|---|---|---|
| 3½ to 4½ in. | 34 | 3½ to 4½ in. | 12½ |
| 2½ to 3¼ in. | 24 | 3 to 3½ in. | + 5 |
| 2¼ in. | 17½ | 2½ to 2¾ in. | + 7½ |
| 1¾ to 2 in. | 13 | 2 to 2¼ in. | +22½ |
| | | 1¾ to 1⅞ in. | +35 |

*Standard Commercial Seamless—Cold Drawn or Hot Rolled*

| | Per Net Ton | | Per Net Ton |
|---|---|---|---|
| 1 in. | $340 | 1¾ in. | $220 |
| 1¼ in. | 280 | 2 to 2½ in. | 190 |
| 1⅜ in. | 270 | 2¾ to 3¾ in. | 180 |
| 1½ in. | 220 | 4 in. | 200 |
| | | 4½ to 5 in. | 220 |

These prices do not apply to special specifications for locomotive tubes nor to special specifications for tubes for the Navy Department, which will be subject to special negotiation.

## Sheets

Makers' price for mill shipments on sheets of United States standard gage in carload and larger lots, are as follows:

| | Cents per lb. |
|---|---|
| *Blue Annealed—Bessemer* | |
| No. 8 and heavier | 4.20 |
| Nos. 9 and 10 | 4.25 |
| Nos. 11 and 12 | 4.30 |
| Nos. 13 and 14 | 4.35 |
| Nos. 15 and 16 | 4.45 |
| *Box Annealed, One Pass Cold Rolled—Bessemer* | |
| Nos. 17 to 21 | 4.80 |
| Nos. 22 and 24 | 4.85 |
| Nos. 25 and 26 | 4.90 |
| No. 27 | 4.95 |
| No. 28 | 5.00 |
| No. 29 | 5.10 |
| No. 30 | 5.20 |
| *Galvanized Black Sheet Gage—Bessemer* | |
| Nos. 10 and 11 | 5.25 |
| Nos. 12 and 14 | 5.35 |
| Nos. 15 and 16 | 5.50 |
| Nos. 17 to 21 | 5.65 |
| Nos. 22 and 24 | 5.80 |
| Nos. 25 and 26 | 5.95 |
| No. 27 | 6.10 |
| No. 28 | 6.25 |
| No. 29 | 6.50 |
| No. 30 | 6.75 |
| *Tin-Mill Black Plate—Bessemer* | |
| Nos. 15 and 16 | 4.80 |
| Nos. 17 to 21 | 4.85 |
| Nos. 22 to 24 | 4.90 |
| Nos. 25 and 27 | 4.95 |
| No. 28 | 5.00 |
| No. 29 | 5.05 |
| No. 30 | 5.05 |
| Nos. 30½ and 31 | 5.10 |

# Metal Markets

Cents Per Pound for Early Delivery

| | Copper, New York | | Tin, | Lead | | Spelter | |
|---|---|---|---|---|---|---|---|
| Aug. | Lake | Electro-lytic | New York | New York | St. Louis | New York | St. Louis |
| 14 | 26.00 | 26.00 | *93.00 | 8.05 | 7.75 | 8.80 | 8.50 |
| 15 | 26.00 | 26.00 | *92.00 | 8.05 | 7.75 | 8.80 | 8.50 |
| 16 | 26.00 | 26.00 | *92.00 | 8.05 | 7.75 | 8.87½ | 8.62½ |
| 17 | 26.00 | 26.00 | .... | 8.05 | 7.75 | 8.87½ | 8.62½ |
| 19 | 26.00 | 26.00 | *92.00 | 8.05 | 7.75 | 9.00 | 8.75 |
| 20 | 26.00 | 26.00 | *92.00 | 8.05 | 7.75 | 9.12½ | 8.87½ |

Nominal.

NEW YORK, Aug. 21.

The markets are generally quiet but strong. There is a heavy demand for copper. Tin has been quiet with offerings a little more ample. Lead is practically unobtainable. Spelter is not freely offered and is advancing steadily. Antimony is higher.

## New York

**Copper.**—The fixing of a price for copper, effective until Nov. 1, has resulted in a large buying movement and there have been many consumers who have covered their requirements for that period, all of course for Government purposes only. Those desiring the metal for non-essential needs, though few, are unable to procure it. Buying for delivery beyond Nov. 1 can only be done under the stipulation that the price ruling at that time shall govern all deliveries. The hot weather in the East, especially around New York, in the past two weeks, has not stimulated the output of refined copper and it is here that at least 90 per cent of this is turned out. There are statements that the output of crude copper is on the decline, owing to inefficient and less labor, as well as other causes. There is a difference of opinion as to whether there will be enough copper to meet the enormous needs. An interesting development is the suggestion by Director McAdoo that an extensive electrification of railroads be seriously considered. The copper, as wire and other forms needed for this project, would be no insignificant amount. For delivery up to Nov. 1 the fixed maximum price for copper is 26c. in carload and larger lots, while for less the quotation is 27.35c. per lb.

**Tin.**—The market has been quiet but there have been freer offerings of tin for Eastern shipment. October shipment from the Straits can now be had at 81c., as compared with 84c to 86c. a few weeks ago and with 97c. at the highest level two or three months ago. But very little business has been done. Buyers continue to leave the market alone, principally for two reasons —they are amply covered by old purchases and want to await developments of the London conference, referred to last week, to which American representatives have been sent. Tin arrivals at Atlantic ports to Aug. 15 inclusive have been 2270 tons and those at Pacific ports 1850 tons for the month up to Aug. 9 inclusive. Spot Straits in London was quoted on Aug 19 at £381 10s. per ton, against £387 10s. the week before.

**Lead.**—There is practically a parallel between the lead and tin markets—it is next to impossible to buy lead. Lead producers are assuming more and more control over the market and it has nearly come to the point that if one wants lead one must go to the lead committee of the producers to obtain it. The agreed quotation of 7.75c., St. Louis, or 8.05c., New York, continues to rule as the maximum. It is stated that there has also been an understanding with dealers that they shall charge no more than ½c. per lb. above the agreed maximum price, or 8.55c., New York, for any metal they may be able to sell, otherwise they may be denied any supplies. Sales have been made as high as 8.75c., New York, for early delivery.

**Spelter.**—The market grows stronger almost with each day, due to the difficulty in bringing out offerings. The purchase recently of 3000 tons of Grade D, or virtually prime Western, by the Government and the publication of Government statistics, revealing a shrinkage in stocks, have been important causes of the stronger market position. The market is quotable at 8.87½c., St. Louis, or 9.12½c., New York, for prime Western for August-September delivery, but the probability is that 9c., St. Louis, would be readily paid. The market is very close to the 9c. level at St. Louis, or 9.25c., New York. For fourth quarter 8.85c., St. Louis, has been bid, but 8.90c. to 8.95c. asked.

**Antimony.**—There has been a more active demand, resulting in moderate sales. For spot or early delivery the quotation is now 13.75c. to 14c., New York, duty paid.

**Aluminum.**—Government maximum prices govern sales of No. 1 virgin metal, 98 to 99 per cent pure, and of scrap at 33c. per lb. for 50-ton lots, 33.10c. per lb. for 15 to 50-ton lots and 33.20c. per lb. for lots of 1 to 15 tons.

**Old Metals.**—The market is quiet. Dealers' selling prices are as follows:

| | Cents per lb |
|---|---|
| Copper, heavy and crucible | 26.00 |
| Copper, heavy and wire | 25.00 |
| Copper, light and bottoms | 23.00 |
| Brass, heavy | 17.75 |
| Brass, light | 13.25 |
| Heavy machine composition | 26.00 |
| No. 1 yellow rod brass turnings | 14.75 to 15.25 |
| No. 1 red brass or composition turnings | 23.50 |
| Lead, heavy | 7.625 |
| Lead, tea | 6.25 |
| Zinc | 6.75 |

## Chicago

AUG. 20.—Trading is slow and with the exception of copper all metals are dull. Settlement on the price of the red metal has cleared the situation for hte time, though many producers had looked for an advance. No real shortage of tin exists and the comparatively small demand is being met. Lead is easy.

We quote copper at 26c for carloads and 27.30c for less than carloads; tin, 98c to $1; lead, 7.85c, nominal; antimony, 14c to 15c. On old metals we quote buying prices, less than carload lots, as follows: Copper wire, crucible shapes, 22.50c.; copper clips, 21.75c; copper bottoms, 20.50c; red brass, 22.50c; yellow brass, 15.50c; lead pipe, 6c; zinc, 5.50c; pewter, No. 1, 57.50c; tinfoil, 67.50c; block tin, 80c.

## St. Louis

AUG. 19.—Non-ferrous metal markets are quiet with spelter a little stronger. On car lots the quotations today were: Lead, 7.75c; spelter, 8.50c to 8.62½c. On less than car lots they were: Lead, 8.25c; spelter, 9.25c to 9.50c; tin, $1.10, with none available; Asiatic antimony, 16c; copper, 27.85c. In the Joplin district zinc blende was weak though it toned up slightly toward the close of the week, with the basis price for 60 per cent ore ranging down to $42.50 per ton, though most of the sales were at $47.50, save for the usual quantity of high grade ore which went at $75 per ton to the sheet zinc makers. The average for the week for the district was $51 per ton. Calamine was steady at $25 to $35 per ton, basis 40 per cent, with the average for the week for the district at $34 per ton. Lead ore was firm at $100 to $101 per ton, basis 80 per cent lead, with the average for the week for the district at $100 per ton. On miscellaneous scrap metals we quote dealers' buying prices as follows: Light brass, 10c; heavy yellow brass, 14c; heavy red brass, 19.50c; heavy copper and copper wire, 20c; light copper, 18.50c; zinc, 5c; tea lead, 5c; lead, 6c; aluminum, 20c.

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Because the lake season is drawing to a close and the bituminous coal movement to the great lakes is still 8.8 per cent behind the schedule arranged at the beginning of the coal year by the United States Fuel Administration, special meetings of the Ohio operators have been called by the district representatives, to convene Thursday of this week at Columbus and on Friday at Cleveland. The representatives of the Fuel Administration at these sessions will be J. D. A. Morrow, general director for distribution; C. P. White, manager of the Lakes distribution, and A. W. Calloway, director of bituminous distribution.

## Electric Furnaces and Electrodes

An important meeting of manufacturers of electric furnaces was held in New York at the Bankers Club on Tuesday of this week to consider the situation in that industry arising from the proposed plan of the War Industries Board to restrict sales of such furnaces as a war measure. In THE IRON AGE of Aug. 1 and 15 this matter was discussed by C. H. Booth and C. H. Vom Baur.

Some time ago some of those interested in the manufacture and sale of electric furnaces formed an association to look after the interests of the industry. The name adopted was the Association of Electric Furnace Manufacturers. One of the first steps was the appointment of a committee designated as the Electric Furnace War Service Committee consisting of F. J. Ryan, Electric Furnace Construction Co., Philadelphia; C. B. Fletcher, Industrial Electric Furnace Co., Chicago, and G. H. Clamer, Ajax Metal Co., Philadelphia. The object of the formation of the committee was to render any service to the Government that might be necessary. Unexpectedly and suddenly the subject of curtailment of the industry was one of the first to be considered.

The meeting Tuesday was attended by the following besides those mentioned above: Carl H. Booth, Booth-Hall Electric Furnace Co., Chicago, representing the Booth-Hall furnace; C. H. Vom Baur, T. W. Price Engineering Co., New York, representing the Vom Baur furnace; H. A. DeFries, Hamilton & Hansell, New York, the Rennerfelt furnace; F. W. Brooke, Electric Furnace Construction Co., Philadelphia, the Greaves-Etchells furnace; T. F. Baily, Electric Furnace Co. of America, the Baily furnaces; Dwight D. Miller, Society for Electrical Development, New York, and S. N. Castle, General Electric Co., New York. The makers of the Heroult, Grönwall-Dixon, Ludlum, Moore and Webb furnaces were not represented.

After a general discussion of the situation, on a motion by Mr. Fletcher, it was decided to instruct the war service committee to obtain from the steel section of the War Industries Board a statement as to whether there is at present enough steel casting making capacity in the country. If not, it was felt that efforts might be made to convince the board that any increase in steel capacity, particularly for small castings, might be brought about by the adoption of the electric furnace.

It was the almost unanimous opinion of those present that the electrode situation was not so bad as painted. It did not develop that there is any scarcity—at least not of sufficient potency to curtail steel output. No one was able to say that any electric furnace installation has been obliged to shut down or bank the output because of lack of electrodes. It was felt that if there was any possible deficiency in the supply the Government could well afford to aid the industry. It was stated that the Carnegie Steel Co. was to produce electrodes for its ferrosilicon plant as well as for other uses.

One of the most serious conditions facing the industry was mentioned by Mr. Castle, who showed how to-day most industrial centers in the United States are short of electric power and that in some cases it is a serious situation. The deficiency is particularly acute in Philadelphia. The power problem was one to be carefully discussed in any thought of the future of the electric furnace industry.

The entire organization expressed a desire to cooperate with the Government and if necessary to recognize the electric furnace as a non-essential under certain conditions. It was believed that the efforts of the association's war service committee would be successful in putting the situation in the right light.

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## Over 100,000 Machine Guns

The United States has passed the 100,000 mark in the production of machine guns. The Army Ordnance Department at Washington announces that up to and including Saturday, Aug. 10, 108,973 machine guns of all types had been inspected and accepted by the army. Of this number, 30,226 are Brownings—11,187 of the heavy type gun and 19,039 of the light automatic rifles.

## Steel for Vehicles in Class C

WASHINGTON, Aug. 20.—Steel requirements of manufacturers of horse-drawn vehicles have been given a class C rating by the War Industries Board. There is not sufficient steel for their demands, however, says Edwin B. Parker, Priorities Commissioner, in a circular outlining the position of that industry and the assistance the board is willing to give in securing allotments of fuel and steel.

"Circumstances do not permit the allotment to your industry," says the circular, "of sufficient quantities of iron and steel to meet your maximum or even your normal requirements. A careful study of your reports of stocks on hand and of your manufactured and partly manufactured products justifies the allotment to you of a certain agreed maximum which will enable you to liquidate your present stocks. This allotment will be made and your requirements within this maximum are hereby given a class C priority rating; conditioned, however, that each manufacturer participating in the allotment shall execute, file and observe the pledge of cooperation in the terms hereinafter set out.

"Being accorded a class C rating for allotments of iron and steel does not mean that the War Industries Board guarantees to the industry that it will receive the materials so allotted, but simply that orders may be placed and deliveries made when and as such orders shall be reached in their order of precedence.

"Each manufacturer desiring to participate in the allotment of iron and steel hereinbefore mentioned will apply to the chief of the vehicle, implement and wood products section of the War Industries Board for authority to place its orders for its proportionate part of the materials allotted to the industry as a whole according to the reports of the manufacturers filed with the section. When the application shall have been approved in writing by the chief of the section, and by the Priorities Committee, it will take a class C priority rating, and orders therefor may be accepted and filled accordingly."

To secure their fuel requirements, manufacturers must file their applications for places upon the fuel preference list. The Priorities Division will consider the character of the product of each manufacturer, the amount of his fuel requirements, the volume of his output, the extent of his direct and indirect business for Government agencies and will place upon the preference list those manufacturers whose fuel requirements bear proper relationship to the character, nature and volume of their business.

The pledge of cooperation to be given to the Priorities Division by the manufacturers of horse-drawn vehicles is in the following terms:

> The undersigned hereby pledges itself (1) to use only in the manufacture of horse-drawn spring vehicles or repair parts for same the iron and steel, and iron and steel parts suitable therefor, which are now in its possession or which may hereafter come into its possession; (2) to devote the products of its manufacture as far as possible to essential uses only, as that term has been or may be defined or applied from time to time by the Priorities Division of the War Industries Board; (3) to urge and procure so far as lies within its power all dealers in or users of its products to exercise all possible economy and conservation in such products by limiting sales and purchases, by curtailing the numbers of varieties and models heretofore manufactured by it, by intelligently repairing and by otherwise protecting and lengthening the life of such products; (4) to co-operate with the conservation division and the vehicle, implement and wood products section of the War Industries Board to effect the conservation of material and economy in the use thereof; (5) not to furnish its products for resale to any dealer who shall fail or refuse to co-operate with the undersigned in carrying out the letter and spirit of this pledge.

It is also required that the manufacturer exact from the dealer a pledge in much the same terms regarding placing the product only in essential use under the general plan of conservation involved.

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The semi-annual meeting of the American Gear Manufacturers' Association will be held at the Onondaga Hotel, Syracuse, N. Y., Sept. 19, 20 and 21. The program for the meeting will be issued in a short time.

# PERSONAL

Norris J. Clarke, secretary Upson Nut Co., Cleveland, left this week for Washington, where he will enter the Government service in the production division of the ammunition section of the Ordnance Department. He will be given a commission as major.

Ephron Catlin, Jr., secretary Southern Railway Supply & Equipment Co., St. Louis, has enlisted in the Naval Reserve Flying Corps and will leave soon for the Great Lakes Naval Training Station.

Paul M. King, formerly in charge of the sales office of the Midvale Steel & Ordnance Co. at Lancaster, Pa., has been appointed general sales agent of the Worth Steel Co., Claymont, Del., whose new steel plant and plate mill will soon be in operation.

B. F. Jones, Jr., president Jones & Laughlin Steel Co., Pittsburgh, has been appointed chairman of the Pittsburgh committee for the fourth Liberty loan. A. V. Davis, president Aluminum Co. of America, is vice-chairman, and T. C. Ham, Jones & Laughlin Steel Co., is secretary of the manufacturers' division.

R. L. Mason, Oliver Building, Pittsburgh, dealer in railroad supplies, also Pittsburgh representative of the C. F. Massey Co., maker of reinforced concrete railway culvert pipe, and the Klein-Logan Co., Pittsburgh, manufacturer of railroad tools, will shortly leave for France to enter the Y. M. C. A. service. In his absence, his business will be looked after by W. I. Creese, formerly Cleveland representative of the J. L. Mott Iron Works of New York.

Albert Brown, London, England, recently elected president of the Society of Motor Manufacturers and Traders of Great Britain, and one of the founders of the commercial firm of Brown Brothers, 22 Great Eastern Street, London, E. C., in a recent letter to President DeWitt Page, New Departure Mfg. Co., Bristol, Conn., says: "It does appeal to me that we want to try to keep the Central Powers out of our markets for some years after this war. We have allowed them to get strong by the way in which we have treated them commercially and all they have done is to take advantage of it, thinking that by allowing them to get into our markets as we did we were afraid of them and too weak to do anything. They have now got to learn the lesson that it was not so. It will be a hard lesson for them, but they will learn it before this war finishes and, therefore, I do think and I hope you will agree that it behooves us and the trading communities of the different countries to work together and should you or any of your people in the motor trade socieitse in America think there is anything we ought to get together on, I shall be delighted to hear from you."

R. Baylor Hickman, president of the Ewald Iron Co., Louisville, Ky., has gone abroad to do special Red Cross work, which will keep him in Europe for several months.

H. J. Seaman, Catasauqua, Pa., formerly general manager Atlas Portland Cement Co., Northampton, Pa., has been appointed manager of the German-American Portland Cement Co., La Salle, Ill., by A. Mitchell Palmer, Alien Property Custodian.

Walter A. Ridings, Porter-Cable Machine Co., Syracuse, N. Y., has been appointed chairman of the machinery and machine-shop products section of the local section of the bureau of resources and conversion of the War Industries Board.

John W. Brooks, general manager, Pass & Seymour Co., Solvay, N. Y., has been appointed to represent local manufacturers on the new community labor board.

Ernest T. Trigg, president John Lucas & Co., Philadelphia, has been elected president of the National Federation of Building Industries, recently organized at Atlantic City, for the coming year. Walter S. Dickey, W. S. Dickey Clay Mfg. Co., Kansas City, Mo., has been elected vice-president, and A. M. Maddock, president Thomas Maddock's Sons Co., Trenton, N. J., manufacturer of sanitary earthenware, has been elected treasurer.

F. W. Gray has severed his connection with the Dominion Iron & Steel Corporation and has left Sydney for New Glasgow, N. S. It is understood that Mr. Gray will probably join the staff of the Nova Scotia Steel & Coal Co. He has been attached to the Dominion Steel Corporation since 1904. He is a graduate in mining from a Sheffield, England, university, and is a member of the Institute of Mining Engineers, London. He is also a member of the Council of the Canadian Mining Institute.

Directors of the Lane Motor Truck Co., Kalamazoo, Mich., have elected L. W. Hamilton president and general manager in place of Dr. W. W. Lang, who recently resigned.

Frank C. Turner has been elected vice-president of the Southern Wheel Co., Birmingham, Ala., with headquarters at St. Louis, Mo.

Max K. Grossheim has been put in charge of the engineering department of L. O. Koven & Brothers, boilermakers and engineers, Jersey City, N. J.

Roland R. Reinholdt, vice-president Ever-tight Piston Ring Co., St. Louis, has been promoted from first lieutenant to captain in the 138th Regiment, 15th Division, U. S. Army, according to word received by his relatives.

Edward Shearson, Shearson, Hammill & Co., New York, and president MacIntyre Iron Co., was recently decorated by the French Government with the grand cross of the Legion of Honor for his work in connection with the association to care for the fatherless children of France. Mr. Shearson has been in France a few months.

Readjustment of the organization of the Emergency Fleet Corporation has been announced by Director General Schwab, the purpose being "to outline more specifically the duties of his assistants." Charles Piez was named general manager, which title he resigned to retain that of vice-president in charge of construction when Mr. Schwab became Director General. Howard Coonley was named vice-president in charge of administration, subject to the managerial direction of Mr. Piez. J. L. Ackerson was made executive assistant to Mr. Schwab in charge of shipyard plants, supply, wood and steel ship contraction, passenger transportation, housing, plant protection and planning.

President Rollin H. White, Cleveland Tractor Co., Cleveland, announces the appointment of R. T. Hodgkins as general sales manager. Mr. Hodgkins was for some years head of the sales organization of the hoisting machinery department of the Yale & Towne Mfg. Co., New York, and for the past four years has been general sales manager of the Studebaker Corporation.

Prof. James T. Young of the University of Pennsylvania has been appointed to the Statistical Investigating Staff of the Bureau of Industrial Housing and Transportation. Professor Young, who was for several years the Dean of the Wharton School of Finance and Economics, is an authority on labor questions, and will give his attention especially to the determination of essential, as distinguished from non-essential industries, in so far as they affect the housing program.

Harry Murdock, H. Murdock & Co., Pittsburgh, manufacturers of babbitt and bearing metals, has been given a commission as captain of engineers, and has reported for duty in Washington.

Frank P. Case has resigned as sales manager of the Braeburn Steel Co., Pitttsburgh, to accept a similar position with the Atlas Crucible Steel Co., Dunkirk, N. Y.

Samuel H. Moon, general manager Standard Sanitary Mfg. Co., Ahrens & Ott Co. division, Louisville, Ky., has been transferred to the Pittsburgh office of the parent company as secretary-treasurer. J. W. Oliver, sales manager at Louisville, becomes general manager. Mr. Oliver is president of the Louisville Board

of Trade. He went to Louisville 15 years ago from the Pittsburgh office. Mr. Moon has been with the company for 25 years.

W. T. Nevins, formerly general superintendent Buffalo Dry Dock Co. (American Shipbuilding Co.) and in recent years marine architect and ship surveyor of Chicago and San Francisco, has been appointed superintendent of ship construction of the Chickasaw Shipbuilding Co., the United States Steel Corporation plant now building at Chickasaw, the new industrial city near Mobile, Ala.

Robert C. Falconer, formerly with the American Bridge Co., and later with the McClintic-Marshall Co., Pittsburgh, was recently appointed chief engineer of the Erie Railroad.

L. J. Campbell, vice-president Youngstown Sheet & Tube Co., Youngstown, Ohio, and son of James A. Campbell, president of the company, is now on the firing line in France, commanding a unit of heavy artillery.

Walter J. Wilson of the Cook-Wilson Electric Supply Co., Pittsburgh, has been elected a director of the Marine National Bank of that city.

The Walter A. Zelnicker Supply Co., St. Louis, has recently added to its sales force Henry Stroh, for the past 10 years connected with the Elliot Frog & Switch Co., St. Louis, and Merle G. Peterson, formerly associated with the Niles-Bement-Pond Co. Mr. Peterson is now connected with the Zelnicker Company's Chicago office.

H. B. Garman, superintendent for a number of years of the Detroit plant of the Steel Products Co., Cleveland and Detroit, has been appointed manager of the Detroit plant.

E. C. Kerrigan has been appointed general purchasing agent of the Great Lakes Engineering Works, Detroit, succeeding James S. Keightly, resigned.

R. W. Gardiner, recently appointed production manager in the Pittsburgh and Pan Handle districts, was the Pittsburgh district representative of the Fuel Administration since last January, having been appointed at the request of the large coal operators in western Pennsylvania. He went to Pittsburgh when the Fuel Administration was established there, being transferred from Washington, where he was chief accountant of the Federal Trade Commission.

John P. McCann, formerly with Edward R. Ladew Co., Inc., New York, has resigned, and has been appointed Pittsburgh sales manager for the International Leather & Belting Corporation, New York, with offices at 39 Terminal Way, S. S., Pittsburgh.

J. Rogers Flannery, Pittsburgh, who has been in charge of the housing project for the Government shipbuilding yards, has been appointed Director of Purchases of Supplies and Equipment of the railroads of the United States. Mr. Flannery is president of the Vanadium Metals Co. and the Flexible Bolt Co., with plants at Bridgeville, Pa., and is also actively connected with other large manufacturing companies in the Pittsburgh district. He served as chairman of the Pittsburgh Foreign Trade Commission, and is a member of the National Foreign Trade Council.

L. F. Miller, formerly of the Mitchell Motors Co., Racine, Wis., has accepted a position with the Anderson Forge & Machine Co., Detroit, as metallurgist.

J. F. Bowman, vice-president and general manager Acason Motor Truck Co., Detroit, has resigned, and H. A. Conlon, sales manager, has been elected vice-president and director of sales.

Frederick Grant, superintendent of the New Jersey Slag Products Co., Dover, N. J., has resigned, to enter the engineers' training camp at Indianapolis, Ind.

B. A. Guy, secretary and assistant general manager of the Curtiss Aeroplane & Motors Corporation, Buffalo, has resigned, effective Aug. 15.

G. E. Schultz, formerly connected with the industrial department of the Westinghouse Electric & Mfg. Co., Pittsburgh, has recently resigned to become manager of Russell, Holbrook & Henderson, 30 Church Street, New York.

W. F. Sneeth, state geologist of the State of Mysore, India, arrived Aug. 14 from England where he has been studying charcoal recovery methods, and he is to continue his studies in this country and will leave the Pacific Coast on Sept. 28 for India.

Donald McKay, London manager of William Jacks & Co., the well-known Glasgow dealers in iron and steel and non-ferrous metals, for whom B. Nicoll & Co. are New York representatives, is spending some weeks in the United States.

E. D. Graff, formerly assistant to vice-president of Joseph T. Ryerson & Son, has resigned his position to enter the office of the Director of Steel Supply, War Industries Board, at Washington. R. J. Stayman, manager of the Detroit plant of Joseph T. Ryerson & Son, has moved to Chicago to take up Mr. Graff's work. W. H. Basse has been transferred from Chicago to Detroit as acting manager of the Detroit plant.

Dwight D. Miller, formerly with the engineering department, Society of Electrical Development, New York, has become connected with the Electric Furnace Co. of America, Alliance, Ohio, as a special representative. For the present he will remain in New York.

## Electrostatic Flue Dust Precipitation

Though the commercialization of the electrostatic process of flue dust precipitation, according to a paper to be presented before the American Institute of Mining Engineers at its Colorado meeting, September, 1918, by O. H. Eschholz, research engineer, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has hinged upon the development of electrical units, particularly transformers, the average first cost of electrical equipment in his opinion is such a small part of the total cost, approximating he says 10 per cent and in rare cases 15 per cent of the cost of the treater, and the value of the recoveries is so large, that the tendency of engineers is to the development of rugged electrical apparatus to insure continuity of service rather than apparatus of low first cost. The value of the yearly recovery from average installations he estimates as being at least twice the total investment, ranging from 150 to 600 per cent of the total first cost, depending on the type of construction required and the character of the material precipitated. The cost of electrical equipment he holds is, therefore, roughly from 2 to 7 per cent of the yearly recovery.

The electrostatic process, which he describes as consisting essentially of subjecting suspended particles to such an electrical force that they are driven from the gas, was originally proposed, he says, for the precipitation of sulphuric acid mists, but it has been extended until now there is practically no fume carrying gas to which the method cannot be applied. As its more common applications he mentions the recovery of non-ferrous smelter flue dust, iron blast-furnace dust, cement dust and potash dust. Rapid progress, he says, is being made in the control of the disturbing phenomena which he believes inevitable with high voltage operation. This voltage, he emphasizes, is not as large as is sometimes put forth, and it is his opinion that very few commercial treaters are operating above 60,000 volts. The synchronous contact maker or mechanical rectifier, he adds, permits operation within a few per cent of the critical voltage of the treater and suppresses short circuits.

## Proposed Baldwin Locomotive Works Addition

BIRMINGHAM, ALA., Aug. 19.—(*By wire.*)—Investigation of the water supply of the Birmingham district as an inducement to location of a branch of the Baldwin Locomotive Works, has begun. It is intended to show the feasibility of a storage reservoir, as the Tennessee company has one with a capacity of 5,000,000,000 gal. Nothing definite has developed with regard to this project.

# LABOR TROUBLES

## Award of the National Board Causes Much Dissatisfaction

The award of the National War Labor Board in the case of the Blake & Knowles Works, Worthington Pump & Machinery Corporation, Cambridge, Mass., has not yet been made operative because of the great difficulty in rearranging the classification of the employees as directed by the award. Last week a committee of the employees waited upon George P. Aborn, manager, and protested against the delay in putting the award into operation, but they decided to return to work after they had been given an opportunity to see the magnitude of the work to be performed. It is predicted that there will be great dissatisfaction with the classification, and that it may be necessary to reopen the case before the award can be made successfully operative.

The National War Labor Board has begun hearings in the labor controversy at the Smith & Wesson plant, Springfield, Mass. The first session was held in Washington, Aug. 16, and adjourned to meet in Springfield, Aug. 17. The case is being heard by Frank P. Walsh, chairman, and Frederick N. Judson, substituting for Chairman William H. Taft. The board assumed jurisdiction after efforts to settle the controversy by Maj. B. H. Gitchell, personal representative of Secretary of War Baker.

## Men Return to Work

Between 600 and 700 employees of the Power & Mining Machinery Co., Cudahy, Milwaukee County, Wis., who walked out on Thursday, Aug. 8, to enforce a demand for improved sanitary conditions and other requests involving hours of labor and wage scales, returned to work on Tuesday, Aug. 13, pending a final adjustment of the dispute by representatives of the Federal War Labor Board. The men agreed to resume their places when it was pointed out that Government requirements of importance were being prejudiced by their refusal to work, and they were assured that adequate measures would be undertaken immediately to arbitrate the difficulty.

The strike of the puddlers at the plant of the A. M. Byers Co., Girard, Ohio, has been declared off pending final decision of the question at issue by the War Labor Board. This strike was caused by the men forming a lodge of the Amalgamated Association and demanding recognition of this organization, which the company refused. The question of wages was not involved in the dispute, as the company has always paid prevailing rates for labor at its Girard and Pittsburgh plants. A decision as to whether the company will be compelled to recognize the Amalgamated Association is expected in a short time.

## Coke Workers and the Draft

UNIONTOWN, PA., Aug. 19.—Anticipating the early passage of the extended draft law, W. L. Byers, manager of production for the Connellsville coke region, has issued an appeal to the coal and coke workers of the region to make application for deferred classification because of their occupation. Mr. Byers explained that the fuel situation is so acute that the region can ill spare any of its workers for the army and calls attention to the fact that the War Department has recognized that a man in the coal mines or on the coke yard is rendering as important a service to his country as if he was in the fighting trenches in France.

## Workmen Scarce at Pittsburgh

Samuel H. Thompson, superintendent in the Pittsburgh district of the United States employment service, and chief of the service clearing house for that district, states that there is a great shortage of skilled and unskilled labor in the Pittsburgh district, and it promises to become worse. Referring to this matter, Mr. Thompson said recently:

"The Pittsburgh district needs at once more than 7000 laborers, skilled and unskilled, to fully equip its essential utilities and industries, the United States Steel Corporation alone needing not less than 2500 such employees. There is also a shortage of miners, at least 2000 of such laborers being wanted to speed up the production of bituminous coal in this district. The munition plants and other essential industries are short of machinists. Toolmakers and men able to repair and set up machinery are very scarce, and common labor is badly needed in the shell factories."

Mr. Thompson states that his office has sent lately to the Neville Island gun and projectile plant nearly 200 applications from men who desire positions at this plant. He is also furnishing large numbers of laborers daily to manufacturing plants in that district.

## Advances in Cost of Living

WASHINGTON, Aug. 21—(*By Wire*).—As a basis for future wage adjustments, the Bureau of Labor Statistics has begun a nation-wide investigation of the actual cost of living. Investigators have been sent to all parts of the country to secure data concerning living cost for one year for representative families. The figures given out by the Bureau today show retail prices of 22 essential articles have increased 3 per cent during the last month, 15 per cent during the last year and 69 per cent in the last five years.

## Appeal to Non-War Industries

WASHINGTON, Aug. 21—(*By Wire*).—With labor shortage figures for unskilled labor totaling approximately 1,000,000, the United States Employment Service has sent out a special quota for State allotments totaling 878,150. Nathan A. Smyth, assistant director of the Service, has issued an appeal to non-war industries to release as much labor as possible to help war industries meet present needs.

A community labor board for the District of Columbia has been appointed to make plans for the transfe of men from non-essential industries to war industries. E. M. Kline, examiner in charge of the Washington employment station, Government Employment Service, is chairman; John J. Purcell, American Federation of Labor, represents employees, and Edward A. Lycett, Washington Steel & Ordnance Co., represents employers.

## Wages and Hours Discussed

WASHINGTON, Aug. 20.—An important bulletin dealing with the question of minimum wages and hours of work was issued yesterday to all shipyards and auxiliary plants by the Industrial Relations Group of the United States Shipping Board and the Emergency Fleet Corporation. The bulletin deals with the recent strike of 3000 men in eight plants at Waynesboro, Pa. Its text is as follows:

"The Director of Industrial Relations is receiving numerous inquiries regarding the establishment of a minimum wage. The National War Labor Board is not ready to announce a fixed policy in this question, but its decision of July 23 gives an indication as to future action.

"At Waynesboro, Pa., 3000 men in eight plants struck for a minimum wage of 30c per hour. The lowest paid men had been getting 22c. The board established a minimum of 40c, 10c more than the workers asked. The board is giving further consideration to this minimum, and reserves the right to revise it on the basis of what is necessary to maintain the worker and his family in reasonable comfort.

"Other important features of the decision are as follows:

"That the number of working hours in this plant shall be the same as at present. That time and one-half for ordinary overtime and double time for Sundays and those holidays fixed by the statutes of Pennsylvania be granted. The board announces that it has under consideration the matter of the determination of the proper working day and the decision here made will be subject to modification when and as the board comes to a determination in that regard.

"That the employees shall meet with committees of their own men in the various shops. That there will be no discrimination against union men, and that the unions shall not be permitted to use coercive means to obtain their objects in any event.

"That apprentices be given an opportunity to learn a trade under circumstances as to character of work and compensation as may be agreed upon between committees of their men and their employees. That the request of the employees to the effect that all piece work and premium work be abolished be denied.

"The findings of the War Labor Board of course supersede the findings of the Shipbuilding Labor Adjustment Board for shipworkers."

### Governmental Housing Projects

WASHINGTON, Aug. 20.—After vain endeavors to find other means of caring for the surplus population of workers, the Bureau of Housing and Industrial Transportation of the Department of Labor has announced that in the following industrial centers it has undertaken governmental housing projects:

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| Alliance, Ohio. | Indiana Harbor, Ind. | Quincy, Mass. |
| Aberdeen, Md. | Indian Head, Md. | Rock Island, Ill. |
| Bethlehem, Pa. | Lowell, Mass. | Sheffield, Ala. |
| Bridgeport, Conn. | Milton, Pa. | Sharon, Pa. |
| Bath, Me. | Madison, Wis. | Staten Island, N. Y. |
| Bettendorf, Ia. | Mare Island, Cal. | Tuscumbia, Ala. |
| Charleston, W. Va. | Norfolk, Va. | Watertown, Mass. |
| Dayton, Ohio. | New Brunswick, N. J. | Watervliet, N. Y. |
| Davenport, Ia. | New London, Conn. | Warren, Ohio. |
| Erie, Pa. | Niagara Falls, N. Y. | Waterbury, Conn. |
| East Chicago, Ind. | Niles, Ohio. | Butler, Pa. |
| Elizabeth, N. J. | Newport, R. I. | Woodbury, N. J. |
| Florence, Ala. | Portsmouth, N. H. | Tullytown, Pa. |
| Gary, Ind. | Pudget Sound, Wash. | Seven Pines, Va. |
| Hammond, Ind. | Philadelphia. | |

The Bureau has an appropriation of $100,000,000 from Congress for this work, but $10,000,000 of this must be spent for housing in Washington.

The Secretary of Labor announced the appointment of Charles T. Clayton, formerly assistant director general of the United States Employment Service, to be chief of the Training and Dilution Service of the department. He will continue director of the Civilian Insignia Division, but this will become a part of his new bureau.

### Workers in Essential Industries

The Wheeling Steel & Iron Co., Wheeling, W. Va., has advanced the wages of employees about 10 per cent, effective August 15. About 2500 persons are affected. I. M. Scott is president.

The Treadwell Engineering Co., Easton, Pa., manufacturer of iron and steel castings and forgings, has placed its works on an 8-hr. schedule, effective August 19. Time and one-half will be paid the men for overtime.

The Westinghouse Electric & Mfg. Co. is now giving employment to over 30,000 persons at its East Pittsburgh, Pa., works, with payroll aggregating, it is understood, close to $750,000 weekly.

The Hardie-Tynes Mfg. Co., Birmingham, Ala., has increased the wages of employees at its shops 10 per cent, effective Aug. 9. The plant, specializing in the manufacture of marine engines and machinery, is producing propeller shafts, rudder blades, engines and other equipment for war service.

The LaLance & Grosjean Mfg. Co., Harrisburg, Pa., manufacturer of enamel and galvanized products, has made a general advance in the wages of employees at its local plant, effective Aug. 12. It is the second such advance this year.

In a census made in Reading and Berks County, Pa., by a local war service committee for Government information, it is shown that there are 77,825 men and boys (over 14 years of age) employed at various occupations in the county at the present time, and of which 70¾ per cent are engaged on war work in the different factories and industrial works.

All employees at the boiler and tank manufacturing plant of Tippett & Wood, Inc., Phillipsburg, N. J., have received a wage advance of 20 per cent. This is the third increase since May 1, making a total advance in this time of 35 per cent.

Howard Coonley, president of the Walworth Mfg. Co., Boston, and vice-president of the Emergency Fleet Corporation, Philadelphia, has issued an order covering the elimination of Sunday work at shipyards, stating that the management was of the opinion that a greater tonnage would result if the day was observed as one of rest. Double time being allowed for Sunday work, it is said that some of the men are remaining away week days and working on Sunday.

## PRICE OF CRUDE OIL

### Government Officials Will Undertake a Stabilizing Program

WASHINGTON, Aug. 20.—In the hope of preventing any radical change in the price to consumers of gasoline and other oil products, a plan has just been made effective through the co-operation of the National Petroleum War Service Committee and United States Fuel Administration that is intended to result in stabilizing the price of crude petroleum both to large and small refiners, and maintaining the flow of crude oil in its present channels.

The details are to be handled by committees on conciliation and co-operation of the various producing fields. It has been the custom for various refiners to bid against each other for crude production by paying premiums in excess of the base rate for oil as established by the larger pipe line companies. This has resulted in the diversion of oil from one refinery to another, and in many instances the payment of excessive prices for crude oil. It has led to considerable disorganization, and for some months the Fuel Administration has sought to correct these practices. The greatest difficulty arising from this situation was experienced in the Mid-Continent field.

Mark L. Requa, General Director of the Oil Division of the United States Fuel Administration, recently met the producers and refiners of the Mid-Continent field in meetings at Tulsa, Oklahoma, and Houston, Texas. As a result of his suggestions, the producers and refiners named from their own members committees to adjust any local dispute which, in the event they were unable to settle, it was agreed, would be referred to the National Petroleum War Service Committee. Should the National Committee be unable to adjust the dispute referred to it, then appeal may be had to the Fuel Administration.

The plan provides generally for maximum premiums to be paid for oil of varying qualities in the various fields throughout the United States. It arranges, so far as is practicable, for the flow of oil in existing channels and assures protection as to price and supplies for small refiners. At the same time it will prevent any radical change in consumers' prices due to the competition which has influenced such prices.

The Fuel Administration believes that by leaving the settlement of all questions as to premiums and diversion of crude oil to the voluntary agreement of the industry itself the harmonious relations between the various interests will be maintained. The Fuel Administration is also endeavoring to have established fair differentials for refiners and distributors.

It is believed this plan will assure the producer a satisfactory price for his oil, the independent refiner protection against the higher bids of his competitor who would pay a greater premium and that the flow of production will be maintained without interruption or change. Thus the oil industry is contributing to the war-work program by eliminating conditions which have arisen out of the premium practice and through the harmonious adjustment of such differences as have existed in the past.

# OBITUARY

COL. DOUGLAS PUTNAM died at his home in Ashland, Ky., August 11, aged 80 years. He was born in Marietta, Ohio, and removed in 1869 to Ashland, where he started the furnace of the Lexington and Big Sandy Railroad Co., which was succeeded by the Ashland Iron & Mining Co. He was president of the last named company as well as of the Ashland Coal & Iron Railway Co. until 1900, when he retired from active business. He is survived by his wife and two sons, L. R. Putnam, treasurer and general manager, the Ashland Steel Co., and D. G. Putnam, president, the Ohia Valley Milling & Supply Co., both of Ashland, Ky.

CAPT. EDWARD H. PHILLIPS, Co. E., 104th Infantry, an employee of the L. S. Starrett Co., Athol, Mass., was killed in action in France July 25. Captain Phillips last spring received the *croix de guerre* from the French Government. He was a sergeant when the company was formed and was rapidly promoted to second lieutenant, first lieutenant and captain. The L. S. Starrett Co. has 124 employees in the military and naval service of the United States and Great Britain.

S. L. SCHOONMAKER, secretary and treasurer of the General Electric Co., shot and killed himself Aug. 18 in his summer home at Rosebank, L. I. Melancholy of long standing is given as the cause. In addition to his position in the General Electric Co., Mr. Schoonmaker was secretary and treasurer of the Montreal Locomotive Works and a director of the Woodward Iron Co. and a number of other companies.

JAMES P. KIELY, St. Louis, founder and former president Laclede Car Co., which some years ago was absorbed by the St. Louis Car Co., died at a hospital in St. Louis on Aug. 5 after an illness of five months. Mr. Kiely was 69 years old and up to the time he sold his interest in the Laclede Car Co. was prominent in St. Louis manufacturing and financial circles. Since then he had lived in retirement.

A. B. HALLMAN, 43 years old, assistant general sales manager Phœnix Iron Co., Phœnixville, Pa., was taken ill suddenly at the Reading Terminal, Philadelphia, on August 13 and died shortly afterward at a hospital to which he had been taken. The cause of death was angina pectoris. He was for 29 years with the Phœenix Iron Co. and Phœnix Bridge Co., having started as a messenger boy.

N. BRUCE MACKELVIE, of Hayden, Stone & Co., New York, known in the Canadian steel trade as the firm's representative on the board of directors of the Nova Scotia Steel & Coal Co., died suddenly Aug. 18 at his home at Sands Point, Long Island, aged 38 years. Mr. MacKelvie was president of the Butte & Superior Mining Co.

AMBROSE M. QUAYLE, for a number of years secretary and treasurer Ohio Coal & Supply Co., 883 The Arcade, Cleveland, died Aug. 7, aged 47 years, after an illness of three days. The company has been in existence for about 30 years and Mr. Quayle has been an active member of the organization.

WILLIS L. BROWNELL, East Orange, N. J., formerly treasurer Crocker-Wheeler Co., died Aug. 11 at his home in Manchester, Conn. Born in Boston in 1846, he attended Brooklyn Polytechnic Institute. In 1900 he became treasurer of the Crocker-Wheeler Co., retiring about three years ago.

FREDERICK SHINN died at his residence in Philadelphia Aug. 6, aged 76 years. He was for 40 years connected with the Ross-Taçony Crucible Co. serving for over 14 years as secretary-treasurer and general manager. He retired from active business in June, 1913, owing to ill health.

EDWIN T. GORHAM, 51 years old, and for the last 12 years superintendent and mechanical engineer of the Wilmarth & Morman Co., Detroit, died in that city last week. Death was the result of an injury suffered 14 years ago when Mr. Gorham was superintendent of the Oliver Machinery Co.

CHARLES A. LEFFERTS, iron founder and head of Charles A. Lefferts & Co., with plant at Second Avenue and Eleventh Street, Brooklyn, died, August 8, from exhaustion brought about by the heat, aged 79 years. He was born in Flushing, L. I.

WILLIAM CABBLE PROVOST, treasurer William Cabble Excelsior Wire Mfg. Co., Brooklyn, died in his apartment at Hotel Chatelaine, in that city, Aug. 3, from heart disease, aged 51 years.

CLARENCE J. LUTHER, founder and president, Luther Grinder Mfg. Co., Milwaukee, Wis., died at his home in Poynette, Wis., after an illness of several years, aged 53.

JOHN HUBERT, head of the Hubert Coppersmith Co., Baltimore, died on August 16 at Saint Agnes' Hospital, near Baltimore, aged 69 years.

## No New Patterns of Refrigerators

WASHINGTON, Aug. 20.—The Conservation Division of the War Industries Board has advised the manufacturers of household refrigerators that no new patterns and styles should be added during the war; that manufacture of many existing styles and patterns should be discontinued, and that the number of grades or patterns and styles should be reduced to conserve materials, especially iron, steel, tin, solder and porcelain.

Steps have been taken, says the announcement of the War Industries Board, to insure an increased production of sheet zinc, and manufacturers of refrigerators should utilize this metal to replace iron or steel wherever possible. Experts have advised that the use of plain sheet zinc for this purpose is perfectly sanitary. A satisfactory process for applying enamel on sheet zinc has been developed, detailed information concerning which will be given manufacturers by the division.

## Serious Car Shortage

UNIONTOWN, PA., Aug. 19.—Officials at the regional fuel administration estimate conservatively that 50,000 tons of coal were lost during the week by car shortage in the Connellsville coke regions. The percentage of coke car supply remains high, but the situation with regard to coal cars has reached an acute stage. The shortage of cars last week was 1274 cars greater than the previous week, according to statistics compiled by W. L. Byers, manager of production for this region. Excessive heat of last week was also a real factor in cutting down the coke output. With an average temperature on the coke yards of 100 deg. it was physically impossible for the drawers to pull their normal set of ovens. On one day alone the Frick company lost 1200 ovens because of the heat.

## President McMurray Resigns

CLEVELAND, Aug. 21 (*By Wire*).—Max McMurray has severed his connection with the Cromwell Steeel Co., Cleveland, with plant at Lorain, Ohio, having tendered his resignation as president, which was accepted at a meeting of the directors Aug. 20. The vacancy was not filled. George H. Beaumont of Pickands, Mather & Co., vice-president, will act for the present as the executive head of the company. Mr. McMurray became president of the Cromwell company at the time of its reorganization in September, 1917, at which time Mr. Beaumont also became connected with it. Previous to that time, Mr. McMurray was for 13 years general manager of the blast furnaces of M. A. Hanna & Co.

The St. Louis Ordnance District, which covers all the Southwestern and Western States south of Iowa, has established offices in the Equitable Building, St. Louis, with M. E. Singleton chief in charge. Three floors will be used ultimately as divisions located elsewhere are assembled in the one building.

## Pittsburgh and Nearby Districts

The Westinghouse Air Brake Co., Wilmerding, Pa., is running its plant almost entirely at present on orders for air brakes for 75,000 freight cars, and on air brakes for 1500 locomotives placed by the Government some months ago. The Westinghouse company got a contract for 75 per cent of the air brakes needed for the 100,000 cars and 2000 locomotives, the other 25 per cent going to the New York Air Brake Co. This large contract will keep the Westinghouse Air Brake Co. busily employed for six to eight months, and at present it has about 4000 employees on its pay-rolls.

The Union Switch & Signal Co., Swissvale, Pittsburgh, an interest of the Westinghouse Air Brake Co., has received a very large additional Government contract for LeRhone 110 h.p. rotary 9-cylinder battleplane motors.

The sale of the plant of the Orenstein-Arthur Koppel Co., Koppel, Pa., near Pittsburgh, by the Alien Property Custodian of the United States, to have been held on Aug. 15, has been postponed until Sept. 12, for the reason that more time was needed to complete an audit of the books of the company. It is said that a large company making steel cars in the Pittsburgh district will probably be the buyer of the plant.

The United Engineering & Foundry Co., Pittsburgh, recently declared the regular quarterly dividend of 2 per cent on the common stock, and an extra of 4 per cent, which was paid in part in Liberty bonds.

The Mesta Machine Co., Pittsburgh, has received an order from the ordnance department, United States Steel Corporation, for four piercing presses, four accumulators and four draw benches for the Neville Island gun and projectile plant. It is said this contract involves about $2,000,000. Owing to the new features embodied in the building of these tools, it is said that many special patterns and tools will have to be made.

The Carnegie Steel Co., Pittsburgh, has placed a contract with the Bartlett-Snow Co., Cleveland, for a sintering plant of the Dwight-Lloyd system, to be installed at its three blast furnaces at Farrell, Pa., and to have a daily capacity of about 350 tons of finished sinter. The plant is expected to be completed about April 1 next.

The Marion Machine, Foundry & Supply Co., Marion, Ind., has recently purchased the plant of the Scottdale Machine & Mfg. Co., Scottdale, Pa., and has taken over all its coal-handling equipment. It will operate the plant at Scottdale, and likely make some additions to it.

The Carbon Steel Co., Pittsburgh, recently bought 103 acres at Kittanning, Pa., near the blast furnace of the Kittanning Iron & Steel Co., in which the former company owns the controlling interest. At present no plans whatever have been made for using the property, and the company will not build an open-hearth steel plant on it as reported.

The Pittsburgh Re-inforced Brazing & Machine Co., Pittsburgh, will make some additions to its plant, for which some new equipment will be needed.

Effective Aug. 15, the Wheeling Steel & Iron Co., Wheeling, W. Va., made a general advance in wages of 10 per cent to employees of its blast furnaces, steel works and pipe mills in the Wheeling, W. Va., district, and also in its tin plate mills at Yorkville, Ohio.

The McClintic-Marshall Co., Pittsburgh, recently took title to about 95 acres and 51 brick houses at Leetsdale, Pa., near Pittsburgh, at a reported consideration of $375,000. This is the land upon which the new plant for fabricating ship plates will be built, work on which started some time ago. The land is near the present plant of the Riter-Conley Co. at Leetsdale, also owned by the McClintic-Marshall Co.

The Matthews Gravity Carrier Co. has started work on an addition to its plant, 50 x 175 ft. Some new equipment will probably be needed.

It is stated that the Pennsylvania Railroad will build a machine shop, engine house, storage house, ice and oil house at Pitcairn, Pa., near Pittsburgh. No inquiries have yet been sent out for equipment.

The Cumberland Coal Co., an interest of the H. C. Frick Coke Co., has bought another block of coal lands in Jefferson township, containing about 284 acres, at the reported price of $1,569,774. Other tracts in Cumberland and nearby townships aggregating about 585 acres have also been bought by the company for $355,965, all these purchases having been made from J. V. Thompson and associates. It is said the total purchases of coal lands made in Greene county, Pa., in the last several months by the Frick Coke Co. interests amount to about $3,000,000.

The Struthers Furnace Co., operating a blast furnace at Struthers, Ohio, has placed a contract for a slag crushing plant to be built at the furnace. The crushed slag is to be handled by the Standard Slag Co., of Youngstown, Ohio.

Furnace No. 1 of the American Manganese Mfg. Co. at Dunbar, Pa., which has been running for some time on forge iron, is now operating on speigeleisen. Stack No. 2 is being relined and repaired, and will be ready for blast in a short time.

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## Mr. Hurley's Tribute to Pittsburgh

Pittsburgh's importance in war work was emphasized by E. N. Hurley, chairman of the United States Shipping Board, in a statement given out in that city a few days ago. "We are leaning heavily upon Pittsburgh," said Mr. Hurley. "There is not a city of the United States that is taking such an active part in war work as Pittsburgh. Here we find nearly everything that is needed in the building of ships from raw to finished material and electrical parts. The transportation of those materials from Pittsburgh also is excellent."

Mr. Hurley said that coal shortage in the Chicago district is affecting expansion of work there. The reason for this coal shortage he explains in this way: "At the present time, there is a great rush of vital war materials to the Atlantic Coast—steel for the building of ships and much coal to run them. Against this eastward stream it is difficult to send coal the other way in any quantities."

Mr. Hurley was in Pittsburgh in company with several other noted Americans who were starting on an automobile trip through the mountains of Tennessee. Besides Mr. Hurley, the party consisted of Thomas A. Edison, Henry Ford, John Burroughs, naturalist; Harvey S. Firestone, Firestone Rubber Co., Akron, Ohio; Charles B. Hanford, United States Intelligence Bureau, and Prof. R. J. H. Delooch, an agricultural expert of Chicago.

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## To Enforce Child and Convict Labor Laws

WASHINGTON, D. C., Aug. 21 (*By Wire*).—The War Labor Policies Board has announced that all future Government contracts will contain special clauses specifying observance of various regulations concerning child and convict labor as well as of all state factory laws. To secure enforcement of these clauses the Board has sent a special appeal to the governor of every state to co-operate. A. C. Summers will represent the board in this co-operation. Meeting of state agencies will be held in Washington Sept. 30 to consider the problem.

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The Bureau of Supplies and Accounts, Navy Department, Washington, is inquiring for 85 machine tools on schedules 1899 and 1901. These include 15 universal and plain milling machines, 10 automatic screw machines, about 20 drill presses, grinders, lathes, boring and drilling machines, planers, shapers, etc.

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The St. Louis assembling plant of the Ford Motor Car Co., Detroit, has been turned over to the United States Government for military uses and the operation of the plant by the Ford company ceased Aug. 15. All the employees have been transferred to other plants of the Ford company until after the close of the war.

# Machinery Markets and News of the Works

## SLACKENING IN ORDERS

### Machine Tool Business Is Falling Off

#### Standards of War-Period Buying Not Being Maintained, Particularly in the East

Machine-tool builders report a noticeable slackening of business in the East, although orders continue in fair volume from all parts of the country. The aggregate business now being done does not, however, measure up to the high standards which have been reached during the war period. The recent establishment of a barred zone in the East for new construction projects is the principal factor in restriction of Eastern business.

Second-hand machinery dealers report that it is now becoming very difficult to procure sufficient new or used machine tools to supply the demand. Despite this scarcity, there remain in storage warehouses in New York several hundred new tools boxed and ready for shipment to Russia. Although there appears to be no immediate prospect of these shipments being released, little is being done to facilitate the acquisition of the tools by American manufacturers. There have been offerings of such tools through brokers, but the owners do not seem to be very anxious to dispose of them.

Railroad business is a feature of the Chicago tool market. The Monon Railroad has closed for a large number of machines. Other roads in the market are the Rock Island, Illinois Central, Chicago, Milwaukee & St. Paul and the Santa Fe. Buyers in the Chicago market include the Cribben & Sexton Co., Waterloo Gas Engine Co. and Western Clock Co. The American Radiator Co. is reported there to have obtained a contract for high explosive shells, which will probably be manufactured at its Buffalo plants.

The Japanese Government is inquirng in Cincinnati for 100 24-in. lathes. There have also been inquiries from the same source for portable drilling machines.

In the New York market, the principal inquiry before the trade is that of the Locomobile Co. of America, Bridgeport, Conn., which, as mentioned last week, will manufacture Liberty motors for tanks. Its shop will have capacity for 15 motors a day.

The Newport News Shipbuilding & Drydock Co., Newport News, Va., has purchased cranes for a new boiler shop at Richmond, Va., and will buy other needed equipment through its purchasing department in the Woolworth Building, New York. The Barber Asphalt Paving Co., Land Title Building, Philadelphia, is also buying for a new boiler shop to be built near Jersey City, N. J.

The Tacony Ordnance Corporation, Tacony, Philadelphia, has inquired for about 25 36-in. and 48-in. boring and turning lathes to increase the capacity of its machine shop for boring and turning gun forgings.

## New York

NEW YORK, Aug. 20.

It is reported in the machinery trade that the Emergency Fleet Corporation has decided against further expansion of shipbuilding plants, and that efforts will be concentrated toward increasing the output of ship engines, boilers and other accessories, of which there is at present a very serious shortage. More than 100 wooden vessels are now lying at docks awaiting the necessary propelling equipment. The decision to provide no more shipways, if such has been reached, is due no doubt to limiting steel-fabricating facilities of the country as well as the inability of the Fleet Corporation to provide engines and boilers for boats as rapidly as they are now being launched. New boiler shops are being created, but it will be some time before they are on a productive basis.

The past week has been unusually quiet in the New York machine tool trade. There is a fair volume of business, but the inquiries are mostly small as compared with recent standards. The largest inquiry now before the trade is that of the Locomobile Co. of America, Bridgeport, Conn., which, as mentioned last week, will manufacture Liberty motors for tanks.

The Dochler Die Casting Co., Brooklyn, has purchased a fair-sized list of tools. The Ordnance Engineering Co., 120 Broadway, New York, has made additional purchases for manufacturing star shells. The company will have a shop at Baldwin, Long Island.

The Newport News Shipbuilding & Dry Dock Co., Newport News, Va., through its purchasing department in the Woolworth Building, New York, has bought eight cranes for a new boiler shop to be built at Richmond, Va. Other equipment is also being purchased. The Emergency Fleet Corporation has canceled the contract given to the Sun Shipbuilding Co., Chester, Pa., to build a boiler shop, and some of the fabricating machines and tools ordered by the Sun company will be transferred to the Newport News Shipbuilding & Dry Dock Co. The cranes bought by the latter company were one 75-ton, double trolley, 80-ft. span; three 30-ton, 3-motor, 80-ft. span, and four 10-ton, 40-ft. span and the order went to the Cleveland Crane & Engineering Co.

An inquiry will shortly be sent out for three single-leg gantry cranes of 30-ton capacity for the same plant. The order of the Barber Asphalt Paving Co., which will build a boiler shop near Jersey City, N. J., was for 14 cranes instead of 17, as reported last week, 17 having been the number originally inquired for. The Whiting Foundry Equipment Co. obtained this order through its Philadelphia office. The American Radiator Co., Buffalo, has placed an order for seven 7½-ton cranes with the Champion Engineering Co. The Federal Shipbuilding Co., Kearny, N. J., is inquiring for one 75-ton crane, with two 50-ton trolleys, 60-ft. span, and one 20-ton single-trolley crane, 80-ft. span. The Central Railroad of New Jersey is in the market for a 4-ton bucket-handling crane, 69 ft. 6 in. span. The New York Engineering Co., 2 Rector Street, New York, has bought a 20-ton crane, 40-ft. span, from the Chesapeake Iron Works. New crane inquiry during the past week has been very light.

The Essential Product Co., Orange, N. J., has filed notice of organization to operate a machine tool and die works at 16 Freeman Street. Richard E. Gaschke and Henry N. Vogel, 111 North Eleventh Street, head the company.

The Simplex Snap Fastener Co., Newark, N. J., has filed notice of organization to manufacture metal snap fasteners, with works at 30-32 Court Street. Samuel Goldberg, Passaic Avenue, West Caldwell, heads the company.

Fire, July 31, destroyed the wagon manufacturing plant of John Sturm & Sons, 379-403 Market Street, Newark, N. J., with loss estimated at $40,000.

The Press Toe Gear Shift Co., New York, has been incorporated with an active capital of $50,000 by S. M. Selig, H. S. Benedikt and S. A. Ortlieb, 250 West Forty-fourth Street.

The Vacuum Muffler Corporation of America, New York, has been incorporated with a capital of $200,000 by T. L. Thompson, E. Christopherson and L. E. Johnson, 27 William Street.

The National Cloth Cutting Machine Co., New York, has been incorporated with a capital of $10,000 by M. Davidson, I. Lifschitz and A. Morduchowitz, 357 Christopher Street, Brooklyn.

The W. & L. Machine & Tool Co., New York, has been incorporated with a capital of $10,000 by B. Schenker, L. Wishnevsky and J. Joffe, 141 Broadway.

Charles Ross & Son, Brooklyn, operating a machine shop at 148 Classon Avenue, have increased their capital from $100,000 to $200,000.

The Elliott Water Heating Co., Brooklyn, has been incorporated with a capital of $25,000 by J. P. Dixon, G. Silkworth and W. J. Elliott, 1246 Myrtle Avenue, to manufacture water heaters, etc.

The Everett Fiber Products Corporation, New York, has been incorporated with capital of $250,000 to manufacture fiber products. Herbert Smith, Arlington, N. J.; Charles B. Reid and J. F. Cleaveland, New York, are the incorporators.

Powell & Underhill, Inc., New York, has been incorporated with a capital of $20,000 to manufacture hardware, etc. J. J. Hegt, A. P. Morewood and W. Matthews, 32 Broadway, are the incorporators.

Charles Winkler, Inc., Newark, N. J., has been incorporated with a capital of $25,000 by Charles Winkler, Martin H. Wiedman and Lewis W. Mulford, to manufacture hardware, etc.

The T. George Stiles Co., Arlington, N. J., has filed notice of organization to manufacture railroad supplies, with works at 625 Devon Street. T. George Stiles heads the company.

The American Art Metal Works, Newark, N. J., has filed notice of organization to operate a plant at 39 South Eighth Street. Felix P. Jolcuvan, 3 Roseville Avenue, heads the company.

The High Pressure Fitting & Valve Co., New York, has been incorporated with a capital of $25,000 by J. W. Naughton, 1385 Union Street, Brooklyn; P. F. Hagen and J. A. Hardman, 27 William Street, New York.

The Estey Brothers Wire Works, 270 Union Avenue, Brooklyn, has leased for a term of years, effective May 1, 1919, a four-story building, 26 x 100 ft., at 34 Cliff Street. The rental aggregates about $150,000, and provides option to purchase. John C. and Frank R. Anderson head the company.

The Elliott Water Heater Co., Inc., Brooklyn, has been incorporated with a capital of $25,000 by W. J. Elliott, 1246 Myrtle Avenue, and J. D. Dixon, 1234 Myrtle Avenue.

The Gotham Can Co., 60 Eagle Street, Brooklyn, has broken ground for an addition at Eagle and Franklin streets to cost $35,000.

The Comstock-Hancock Co., New York, has been incorporated with a capital of $50,000 by C. A. Comstock, C. H. Noyes and L. F. Sniffin, 49 Wall Street, to manufacture knitting machines, etc.

The Modern Tool & Machine Works, 176 Worth Street, New York, has increased its capital from $20,000 to $50,000.

Practically all of the principal glass plants at Millville, N. J., closed their blasts July 31 for a month, during which extensive repairs and improvements will be made to allow for the reopening Sept. 3. The plants include the Millville Bottle Works, Whitall-Tatum Co. (also operating at Glasstown) and the T. C. Wheaton Co. This latter company will continue the operation of two tube mills during this month, as will also the International Glass Co., which operates eight tube shops and four mold buildings.

The Ramberg Iron Works, Inc., Pioneer Street, Brooklyn, is having plans prepared for the erection of a group of shop buildings at Walcott and Dykmann Streets, to be used as a ship repair works.

The Aetna Brass & Foundry Corporation, Brooklyn, has been incorporated with a capital of $10,000 to manufacture brass and bronze castings. G. S. Drachman, S. A. Langfur and J. S. Blatt, 368 East Fourth Street, are the incorporators.

Kucher & Miller, Inc., New York, has been incorporated with a capital of $10,000 to manufacture tools, gages, etc. A. and J. E. Kucher and W. H. Miller, 63 South Elliott Place, Brooklyn, are the incorporators.

A one-story, brick and concrete boiler plant, 25 x 48 ft. to cost $25,000, will be erected by Steinway & Sons, New York, at their factory on Blackwell Street, Long Island City.

The Varick Machine & Tool Works, New York, has been incorporated with a capital of $8,000 to manufacture tools, etc. F. Levy, M. and L. Ehrlich, 224 East 165th street, are the incorporators.

The Viking Tool & Machine Co., Inc., 75 Thirteenth Street, Brooklyn, has increased its capital from $10,000 to $25,000.

The North River Ship & Engineer Corporation, New York, has been incorporated with a capital of $100,000 to operate a shipbuilding plant. M. Metkiff, E. P. Shomburg and P. D. Benson, 154 Nassau Street, are the incorporators.

The E. Behringer Sheet Metal Works, Inc., 315 East Ninety-seventh Street, New York, has awarded a contract to Frederick Weber, 109 Woodbine Street, for the construction of a one and two-story brick machine shop, 148 x 250 ft., at Flushing and Wyckoff avenues, Brooklyn, to cost $30,000.

The Burger Metal Products Co., New York, has been incorporated with a nominal capital of $5,000 to manufacture metal goods. I. Blecher, A. and A. Burger, 49 East 106th Street, are the incorporators.

The five-story factory at Walter Avenue and 140th Street, New York, has been purchased by C. D. Coughlan, manufacturer of piano hardware and will be used in part for extension in his present works.

The Hygrade Thermometer Co., Brooklyn, has been incorporated with a capital of $10,000 to manufacture thermometers, etc. A. and H. S. Eisenhuth and L. Henn, Ridgewood, L. I., are the incorporators.

The Central Foundry Co., 90 West Street, New York, with works at Newark, N. J., and other locations, is said to be planning for the establishment of plants at Holt and Bessemer, Ala., for the manufacture of munitions.

The Williams & Wells Co., 248 Fulton Street, New York, marine supplies has increased its capital from $50,000 to $200,000.

The American Locomotive Co., Schenectady, N. Y., is building a one-story boiler plant addition, 120 x 175 ft., to cost about $80,000.

The James L. Taylor Mfg. Co., Poughkeepsie, N. Y., manufacturer of builders' hardware, has increased its capital from $50,000 to $100,000.

The Republic Platinum Corporation, Gloversville, N. Y., has been incorporated with a capital of $50,000 to manufacture platinum specialties. E. P. Bellows, H. H. Belknap and I. H. Wright, Gloversville, are the incorporators.

The Alloy Foundry & Machine Corporation, New Rochelle, N. Y., has been incorporated with a capital of $9,900 to manufacture castings, etc. H. Oppenheim, H. Werner, and P. S. Feldman, 450 Fourth Avenue, are the incorporators.

The American Standard Metal Products Co., Paulsboro, N. J., is planning to increase its output and about 500 additional persons will be employed. It is working on Government contracts.

The Vosburgh Miniature Lamp Co., 289 Valley Road, West Orange, N. J., manufacturer of electric lamps, has increased its capital from $20,000 to $100,000.

The A. & F. Brown Co., Third Street, Elizabethport, N. J., manufacturer of shafting, pulleys and special machinery, is making alterations and improvements in its foundry at Third Street and Park Avenue, to cost about $15,000.

The Kearny Brass Foundry, Kearny, N. J., has been incorporated with a capital of $25,000 to manufacture castings. Samuel P. Blauvelt and Jacob C. Chadwick, Kearny, are the incorporators. It also proposes to manufacture tools.

The Crocker-Wheeler Co., Ampere, N. J., manufacturer of motors, etc., has filed plans for the erection of a one-story extension to cost $4,000.

The new naval air station to be constructed by the Government, Bureau of Yards and Docks, Washington, D. C., at Cape May, N. J., will consist of a one-story, forge and blacksmith shop, 16 x 20 ft.; laboratory and compressor plant, 30 x 60 ft.; reclaiming shop, 28 x 51 ft.; two-story carpenter shop and paint works, 26 x 70 ft.; fabric shop, 50 x 100 ft.; two one story blower houses, each 21 x 28 ft., and other buildings. Contracts for the erection of twenty-one other structures, not noted above, have been awarded to Cramp & Co., Denckla Building, Philadelphia, at a cost of $496,693.

The Everlasting Valve Co., Jersey City, N. J., has filed plans for the erection of a one-story shop at 65 Fisk Street, to cost about $7,000.

Thomas A. Edison, Inc., West Orange, N. J., manufacturer of electrical specialties, has purchased property in the meadow district, Kearny, consisting of a tract, 200 x 1995 ft. on the west side of the Hackensack River, adjoining a site acquired by the company a few months ago. It will be used in connection with the proposed new works of the company.

The Aluminum Goods Mfg. Co., Manitowoc, Wis., has completed the erection of a six-story, reinforced concrete plant at Belmont and Ridgewood Avenues, Newark, N. J., and will devote a portion of the structure to the manufacture of products for the Government. About 300 persons will be

employed in initial operations and it is expected to increase this number to about 1,000.

The Art Casting Works, 104 Verona Avenue, Newark, N. J., has been organized to manufacture castings. Edward G. Gagel, 20 DeWitt Avenue, Belleville, heads the company.

In connection with the new vocational school to be constructed by the board of education, Newark, a machine shop, forge shop, electrical and other departments will be installed. The building will be of reinforced concrete, 250 x 250 ft., and is estimated to cost $500,000. It is proposed to have the structure under way at an early date to provide for instruction to wounded soldiers returning from the front.

## Buffalo

BUFFALO, Aug. 19.

The Buffalo Marine Construction Co., Buffalo, will add to its shipbuilding plant on the harbor at the foot of Michigan Avenue, a steel frame building to be used as a plate forming shop.

The Atlas Steel Castings Co., Buffalo, will enlarge its core room at a cost of $10,000.

The Page Metal Co., Rochester, is completing plans for the erection of a plant at Kaig, N. Y.

The Dahlstrom Metallic Door Co., Jamestown, N. Y., will add a two-story, 31 x 32 ft. gas producer building of reinforced concrete and brick to its plant.

The Taylor Instrument Co., 95 Ames Street, Rochester, has awarded contract to Gorsline & Swan, that city, for the erection of a three-story factory, 80 x 230 ft.

The city of Syracuse, N. Y., has had plans drawn for a one-story pumping station to be erected on Fellows Avenue, at an estimated cost of $8,000. H. C. Allen is city engineer.

John Dunlop's Sons, Phoenix, N. Y., will build a power house, 50 x 50 ft., in connection with a three-story silk mill, 50 x 200 ft., for which bids are now being taken.

The Corning Glass Works, Corning, N. Y., is taking bids on a three-story addition, 60 x 120 ft., to its plant on Walnut Street.

The Lumen Bearing Co., 167 Lathrop Street, Buffalo, operating a brass foundry, will build a one story addition, 18 x 34 ft., to cost about $5,000.

The Buffalo Pressed Steel Co., 800 Kensington Avenue, Buffalo, has increased its capital from $75,000 to $500,000.

The Prest-O-Lite Co., 720 Main Street, Buffalo, is negotiating with the City Council for permission to build a new factory on Abbey Street, for the manufacture of acetylene apparatus.

The Semet-Solvay Co., Syracuse, N. Y., will build a machine shop, laboratory, and other structures at its Split Rock Works to replace the buildings recently destroyed by fire. It is understood that the structures will be used for the production of materials for the Government, but will not be employed for the manufacture of TNT as were the former buildings.

The Symington-Anderson Co., Rochester, N. Y., is planning to operate its gun plant under 24-hr. service in the near future, or as soon as materials are available to make three 8-hr. shifts possible. The plant is giving employment to over 1550 persons, about 75 of whom are women. The works are being operated for the manufacture of 75-mm. guns and 6 in. trench mortars. The plant is designed for a capacity of 10 complete 75-mm. guns daily. C. H. Lynn is manager.

## New England

BOSTON, Aug. 19.

The pressure upon New England machine tool builders for increased output is the marked feature of the week. Some very large orders have been placed, particularly for equipment for manufacturing heavy artillery. The machine tool plants are accepting the heavy business offered, although there is great uncertainty as to how the supply of mechanical operators and toolmakers is to be increased to take care of the larger production thus promised. Some of these orders will be reflected in greatly extended demands upon the foundry capacity of this section. The movement toward the establishment of training or vestibule schools is gaining strength and several such schools for the training of mechanical operators are projected. These are not wholly for the training of operators on the simpler types of machines, but are also for the purpose of taking promising workmen from some of the simpler operations and training them for work requiring special skill.

Actual stoppage of production on account of labor troubles is almost entirely absent, but the feeling of unrest and the demand for increased wages is spreading to cities that have had no labor troubles for months. The recent General Electric award and the pending awards in Bridgeport and at the Smith & Wesson plant in Springfield by the National War Labor Board will probably establish new standards that will have to be met by employers in the other industrial centers of New England.

The S. A. Woods Machine Co., Boston, Mass., has awarded to the Leighton Mitchell Co. a contract for an addition, 60 x 120 ft., one story. Work is under way.

The H. C. Hart Mfg. Co., Unionville, Conn., has increased its capital stock from $50,000 to $150,000.

The Bullard Machine Tool Co., Bridgeport, Conn., has awarded a contract for an addition for a pattern and storage building, 74 x 128 ft., two stories, to John R. Sheehan.

The National Equipment Co., Bridgeport, Conn., machinery and tools, has been incorporated with authorized capital stock of $50,000. It will commence business with capital of $10,000. The incorporators are Harry B. Romm, Francis J. Breen and Hazel E. Walsh.

The Colvin Foundry Co., Providence, R. I., has awarded to the C. J. Bigney Construction Co. a contract for the following additions: Core baking building, 26 x 44 ft., one story, to contain five core ovens; shipping room, 20 x 38 ft., one story; shipping sheds, 24 x 72 ft., one story; coke and sand building, 28 x 38 ft., two stories; and a retaining wall, 16 ft. high and 300 ft. long, for the storage of pig iron.

The Naugatuck Valley Crucible Co., Huntington, Conn., has increased its capital stock from $500,000 to $650,000.

The Graton & Knight Mfg. Co., Worcester, Mass., has awarded to Keefe Brothers a contract for an addition, 45 x 85 ft., two stories.

The Winchester Tool Co., Winchester, Mass., has been incorporated with authorized capital stock of $25,000. Alfred C. Routhier is president and Harold E. Ball, treasurer.

The Philbrick-Booth Foundry Co., Hartford, Conn., has awarded a contract for an addition, 40 x 50 ft., one story, to R. G. Bent & Co.

The American Machine Co., Hartford, Conn., has been incorporated with authorized capital stock of $50,000 by Frank D. Ellison, George E. Quinn and Robert H. Palmer. It will begin business with capital of $20,000.

The Autowire Co., Waterbury, Conn., has had plans drawn for an addition, 49 x 110 ft., one story.

The American Brass Co., Waterbury, Conn., has begun the erection of an addition, 26 x 65 ft., one story.

The Union Mfg. Co., New Britain, Conn., has awarded to the Ellison Construction Co., Hartford, a contract for an addition, 18 x 120 ft., one story.

Landers, Frary & Clark, New Britain, Conn., have purchased the plant of the National Spring Bed Co. in that city and will use it for the production of war materials.

The Beach Mfg. Co., Boston, has been incorporated with authorized capital stock of $150,000 to manufacture machinery and tools. John J. Fox is president and Chester T. Murphy, Brookline, treasurer.

The French Mfg. Co., Waterbury, Conn. has awarded to the Torrington Building Co., Torrington, a contract for three additions: 42 x 100 ft., two stories; 20 x 97 ft., two stories; and 10 x 97 ft., one story.

The Globe Gage & Tool Co., Boston, has been incorporated with authorized capital stock of $24,000. Charles B. Roberts is president and Walter W. Wright, Canton, treasurer.

The New Departure Mfg. Co., Bristol, Conn., has awarded to the Torrington Building Co., Torrington, a contract for three additions: 60 x 90 ft., 20 x 97 ft., and 60 x 90 ft., one story.

The Yale & Towne Mfg. Co., Stamford, Conn., is asking bids on an addition, 50 x 261 ft., six stories.

## Philadelphia

PHILADELPHIA, Aug. 20.

The Tacony Ordnance Corporation, Tacony, Pa., has issued an inquiry for about 25 36-in. and 48-in. gun boring and turning lathes. The production of gun forgings at this plant is exceeding the machining capacity, and more tool equipment is therefore required.

A fair business is being done by local dealers. The Bethlehem Shipbuilding Corporation is still buying for its new Alameda, Cal., plant. The New York Shipbuilding Corporation, Camden, N. J., it also continuing its purchases for the additions to its plant.

The J. G. Brill Co., Philadelphia, has bought a few tools The Hale & Kilburn Co., Philadelphia, has received quota-

tions on equipment which may be required for a munition contract.

At this writing, no definite action has been taken by the Baldwin Locomotive Works toward expansion. Three projects are understood to be under consideration, namely, a new plant in Chicago and one in the South and an addition to the Philadelphia works. Further than to obtain quotations on cranes, no action toward purchasing equipment has been taken.

The Barber Asphalt Paving Co., Land Title Building, Philadelphia, is buying equipment for a boiler shop it will build near Jersey City, N. J.

The William R. Thropp Sons Co., Trenton, N. J., will engage in turbine work and is adding a few large tools to its equipment.

The Badenhausen Co., Philadelphia, has bought equipment for an addition to its boiler shop at Cornwells, Pa.

The Pennsylvania Railroad Co., Philadelphia, has awarded a contract to Irwin & Leighton, Twelfth and Cherry streets, for the construction of a new plant at Greenwich Point, South Philadelphia, including machine shop, engine house and auxiliary shops, oil houses, storage buildings, etc. The company has also let a contract to Braun & Stuart Co., Commercial Trust Building, for new works at Morrisville, Pa., to cost about $300,000.

The Vulcan Mills, Twenty-fifth and Spruce streets, Philadelphia, will build an addition to its plant and make alterations and improvements in the present structure to cost about $10,000. Fred A. Havens & Co., 845 North Nineteenth Street, are the contractors.

A one-story, electric power station, 50 x 120 ft., will be erected by the Midvale Steel & Ordnance Co., Widener Building, Philadelphia, at its new gun works at Nicetown. The entire plant, including two machine shops, 114 x 482 ft. and 183 x 562 ft., respectively, each with three wings, will cost about $750,000. Barclay White & Co., 1713 Sansom Street, have the contract.

The Girard Iron Works, Twenty-second and Master Streets, Philadelphia, has sold the one story foundry, shops, office and other buildings at Twenty-second Street and Allegheny Avenue, with site about 200 x 240 ft., to the Aetna Foundry Co., Inc., for about $47,000.

The Electric Welding & Ship Repairing Co., Philadelphia, has been incorporated by Johannes Kjekstad and associates, with capital of $50,000.

The Bureau of Yards and Docks, Washington, D. C., has taken bids for the construction of a new one-story submarine battery storage building, 90 x 340 ft., at the League Island Navy Yard, Philadelphia, to cost about $125,000.

The Concrete Steel Co., Pennsylvania Building, Philadelphia, will build a one-story addition at Delaware Avenue and Pearl Street, Camden, N. J., 52 x 120 ft.

The New York Shipbuilding Corporation, Camden, N. J., has awarded a contract to the Raymond Concrete Pile Co., 90 West Street, New York, for the construction of shipways at the proposed new plant, south of Newton Creek, at a cost of $706,899.88. The new plant will be equipped for the construction of transports and will be used as an extension to the present Camden works.

The Emergency Fleet Corporation has authorized the construction of 12 new shipways at the yards of the Pusey & Jones Co., Gloucester City, N. J. With this extension, practically doubling the present capacity, the yards will be among the largest on the Delaware River. It is proposed to extend the plant along Timber Creek, and preliminary plans are being prepared.

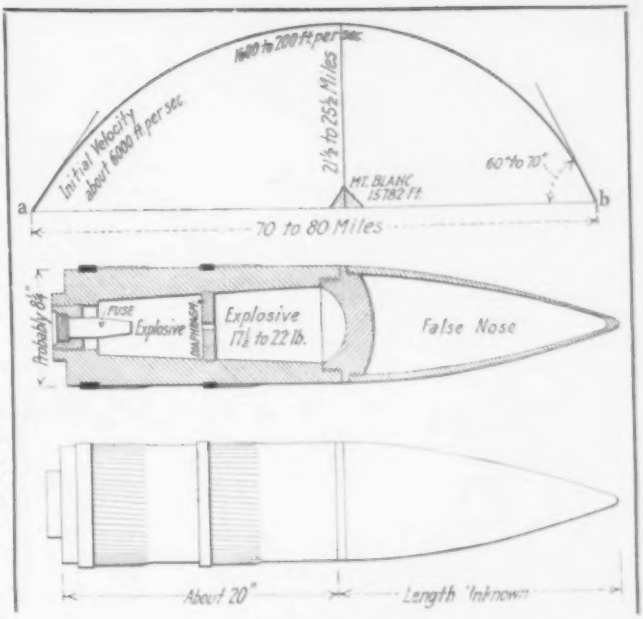
The Board of Freeholders, Trenton, N. J., will receive bids up to 2.30 p. m., Aug. 27, for two electric motors, with gearing control houses, wiring and auxiliary equipment, for the operation of the Southard Street Bridge, over the Delaware and Raritan Canal, and the Olden Street Bridge. John McCullough is director of the department of bridges.

The Juruick Engineering Corporation, Allentown, Pa., has been incorporated with a capital of $10,000 to manufacture refrigerating machinery and equipment. M. F. Juruick, H. H. Steckel and Coszette Thomas are the incorporators.

The Edgmont Motor Corporation, Chester, Pa., has been incorporated by J. C. Taylor and associates, with capital of $25,000, to manufacture motors.

The International Motor Co., Allentown, Pa., is now giving employment to over 1200 persons at its local plant, about 25 of whom are women. The company has placed its new shop addition, 80 x 220 ft., recently completed, in operation.

The Lehigh Valley Railroad Co., Hazelton, Pa., has commenced clearing property at Ashmore, near Hazelton, for the construction of a new engine house, with auxiliary shops for repair work.




SHELLING OF PARIS REGION

**The probable nature of the shells with which the Germans have been bombarding the Paris region and a sketch of the trajectory of the missiles were discussed in *Le Génie Civil* in its issue of April 20. From fragments it has been ascertained that the shell is made of chrome-nickel steel, and that it has rifling cut in two steel bands formed on the exterior at the places indicated. Behind each of these steel belts is a copper driving band of which the forward one is rifled before firing, while the other one is rifled in the gun and forms a gas check. The shell has a thick central diaphragm intended to prevent the explosive charge consolidating itself into a hard mass at the rear owing to the shock of firing at high velocity. The false nose is more or less conjectural. The diagram of the trajectory is interesting in indicating in part how much higher than the lofty Mt. Blanc the shell rises in spanning the distance desired. The article emphasizes that there is nothing in the German gun that shows marked inventive talent, as French artillerists were in possession of particulars necessary for constructing guns of extreme range and high muzzle velocity years ago.**

After being idle since early in July, the Colonial Foundry & Machine Works, Columbia, Pa., operated by J. E. Baker & Co., resumed capacity operations, Aug. 12. Eugene Andes has succeeded James A. Constantine as superintendent.

The Columbia Malleable Castings Co., Columbia, Pa., has increased its capital from $50,000 to $75,000.

The C. M. Dodson Coal Co., Beaver Brook, Pa., is planning for the installation of new electric pumping machinery at its No. 5 colliery. Two high-powered units of large capacity will be used.

The Reading Chain & Block Corporation, Reading, Pa., has been incorporated with a capital of $200,000 to manufacture chains, hoists, etc. F. A. Howard, Mount Penn, is the principal incorporator.

The Baldwin Locomotive Works, Broad and Spring Garden streets, Philadelphia, has awarded a contract to R. H. Scroggins, Chester, Pa., for a one-story addition, 60 x 135 ft., at its Eddystone works.

## Baltimore

BALTIMORE, Aug. 19.

The John T. Lewis Brothers Co., Baltimore, which will build a plant at Columbia Avenue and Putnam Street for the manufacture of shrapnel balls will erect a one-story brick building, 50 x 257 ft. to cost $30,000; a one-story temporary tool repair shop, 20 x 48 ft., to cost $800, and other buildings. The contract has been awarded to the McIver Construction Co.

The Union Shipbuilding Co., Fairfield, Md., has acquired waterfront property adjoining its present plant and is considering plans for the erection of an addition.

The Edgemoor Iron Co., Edgemoor, Del., is building a one-story shop addition to cost about $75,000.

The Bureau of Yards and Docks, Washington, D. C., has taken bids for the erection of an addition to the electric power plant at the Washington Navy Yard. It will be two stories, 33 x 109 ft.

The new forge shop to be erected by the Bartlett Hayward Co., Baltimore, at its shell works, Scott and McHenry streets, will be about 300 x 500 ft., instead of 245 x 300 ft. It will be of steel and concrete and is estimated to cost over $750,000.

The Cade Mfg. Co., Shelby, N. C., manufacturer of typesetting machines, has acquired property, about 195 x 200 ft., including existing factory for new works. The present plant will be remodeled and machinery installed to provide for an initial capacity of about 1000 machines per year. E. B. Hamrick is president.

The Athens Foundry & Machine Co., Athens, Ga., is planning for the construction of an addition, 40 x 240 ft. O. H. Arnold, Jr., is president.

The Norfolk & Western Railroad Co., Roanoke, Va., will install new electric equipment at its power station at Bluefield, W. Va.

The Jennings Automatic Dump Body Co., Third Street, Roanoke, Va., has been incorporated with a capital of $50,000 to manufacture automobile bodies. M. H. Jennings, Charles B. Jennings and H. B. Rockhill are the incorporators. It is understood that the new organization will acquire the present plant of M. H. Jennings for its initial works.

The St. Petersburg Maritime & Construction Co., St. Petersburg, Fla., has been incorporated with a capital of $500,000 under Delaware laws to construct vessels of different types. R. B. West, F. R. Francke and W. H. Franklin, St. Petersburg, are the incorporators.

George J. Pilkington, Miami, Fla., is organizing a company to build a shipyard for the construction of vessels for the Government. A site, 300 x 475 ft., on Biscayne Bay has been secured for the proposed plant, which is estimated to cost about $200,000.

## Chicago

CHICAGO, Aug. 19.

The local machine-tool market continues active, although not up to the mark set by July, which was one of the best months of the year. Local interest is still acute relative to the status of the machine tool dealer to be defined by the Government. No definite ruling has yet been announced, although it is hoped that dealers which take the place of manufacturers' sales forces will be recognized as necessary to the efficient distribution of tools. Nevertheless, it is stated with authority that the Rock Island Arsenal has held up placing orders on a few items, awaiting official determination in this matter. The National Machine Tool Builders' Association is urging a settlement of the case.

The second-hand tool market is dull, due in part to the scarcity of saleable tools at reasonable prices, plus an actual falling off in demand. It is well understood that a large volume of tools, boxed for export, is being held at Eastern ports with very little prospect of release for shipment. Evidence of this comes in the form of a shipment from an Eastern seaport to one of the large munition factories of several tools held for many months for shipment to Russia, and there have been offerings in the local market of machines similarly situated, ownership in which is vested both in domestic exporting firms and in foreign dealers. It is thought that there will be an increasing number of such offerings, and there is the belief that the distribution of these tools in the nearest markets would quicken deliveries and buying in the Middle West.

Railroad business is a feature of the market. The Monon has closed for practically all the machines on the list distributed in May. The Rock Island, Illinois Central and St. Paul have closed for a number of lathes and boring mills. It is reported that on the latter item some Western roads have indicated willingness to accept tenders on second-hand tools. The Santa Fe has not yet closed on its list recently sent out.

The Cribben & Sexton Co. has partially placed its orders for the tools mentioned last week.

The American Radiator Co. has received an order for 155-mm. high explosive shells, it being understood that this order will be filled at its Buffalo plants.

The Waterloo Gas Engine Co., Waterloo, Iowa, has sent out a small list of tools, including lathes, grinders and radials.

The Western Clock Co., LaSalle, Ill., has purchased several screw machines and is in the market for engine lathes and drill presses.

William P. Whitney, architect, 943 First National Bank Building, Chicago, has prepared plans for a one-story foundry, 124 x 160 ft., to be erected at Clearing, Ill.

The Ryan Car Co., Hegewisch, Ill., has had plans prepared for a two-story factory, 60 x 166 ft., to cost $40,000.

The Crane Co., Chicago, is having plans prepared for another addition to its Corwith plant, Kedzie Avenue and Forty-sixth street, to cost $400,000. It will be 80 x 280 ft. and similar to one recently started, to which it will be connected by a 40-ft. passageway. This will be the fifth new building erected at the plant this year.

The Burnside Steel Co., Chicago, will build a one-story foundry, 60 x 180 ft., to cost $25,000. A. J. T. Bennett, 1416 First National Bank Building, is the architect.

The Gits Brothers Mfg. Co., Chicago, maker of oil cups, has purchased property at the northwest corner of Kilbourn and Nineteenth Streets, 160 x 300 ft., which is improved with a one-story factory 125 x 125 ft., just completed. It is expected that the company will erect another building similar to this.

The Chicago Steel & Wire Co., Chicago, has increased its capital stock from $60,000 to $100,000.

The Vierling Steel Works, Chicago, has purchased property in Twenty-third Place, west of Princeton Avenue, 25 x 125 ft., upon which it will build an addition to its plant.

Libby, McNeil & Libby, Chicago, have had plans prepared for an eight-story brick and concrete can manufacturing building, to cost $120,000.

The plants of the Ferguson Mfg. Co., maker of well drills, supplies and tools, and the Waterloo Register Co., Waterloo, Iowa, were recently destroyed by fire. Both companies announce that they will immediately rebuild.

The Deb Mfg. Co., Rockford, Ill., has been incorporated with a capital of $6,000 to manufacture oil gas burners, tank and utility heaters and sheet metal products.

The Safety Electrical Mfg. Co., Sioux City, Iowa, has been incorporated with a capital of $100,000 by C. B. Chrysler, Morton S. Nelson and H. E. Trowbridge. It expects to take over the plant of the Liberty Cartridge Co., which was recently dismantled.

The Chicago Pneumatic Tool Co. announces that the contract has been let and work started on the erection of an addition to its Cleveland plant which will double the present output. It is expected that work will be completed on the building about Nov. 1. The necessary equipment has been ordered.

The Illinois Central Railroad Co., Chicago, is having plans prepared for a new machine shop and engine house to consist of one main building at Benton, Ill.

The Manufacturers' Equipment Co., Jefferson Street, Chicago, has filed plans for the erection of a brick addition to its plant, at Fillmore Street and Waller Avenue, to cost about $50,000.

The Burnside Steel Co., 1300 East Ninety-second Street, Chicago, has taken out a permit for a new foundry to cost about $25,000.

The Carter Iron & Steel Co., Sixth Avenue, Fort Dodge, Iowa, has broken ground for a new plant to cost about $200,000. C. L. Carter is general manager.

## Detroit

DETROIT, Aug. 19.

Buying of machine tools for munition work continues in satisfactory volume. Miscellaneous orders have fallen off, but total purchases are above the average.

Deliveries have bettered considerably, except on large machines.

Manufacturers are perturbed over the domestic fuel situation. The serious labor shortage in this district threatens to increase because of the lack of coal for homes of workers. To attempt to secure additional allotment of anthracite coal to Detroit, a committee of manufacturers, including representatives of the Ford Motor Co., Lincoln Motor Co., Great Lakes Engineering Works, Packard Motor Co., Detroit Shipbuilding Co., Board of Commerce and the State and local fuel administrators placed the situation before the National Fuel Administration in Washington last week, but could secure no guarantee with the exception of the promise that a better grade of bituminous coal would be given priority shipment into Detroit. Leading manufacturers of the city, entirely satisfied with the industrial coal situation, are anticipating serious consequences because of the shortage of 500,000 tons of coal suitable for homes.

The Muskegon Boiler Works, Muskegon, Mich., has increased its capital stock to $125,000.

The General Motors Co. has taken over the plant formerly occupied by the Monroe Motor Car Co., Pontiac, Mich., and will manufacture tractors, pending the completion of its plant at Janesville, Wis.

William Small & Co., Indianapolis, Ind., has secured the plant, patterns, equipment and all accounts of the Monroe Motor Car Co., Pontiac, on a bid of $68,000.

The Briscoe Motor Corporation, Jackson, Mich., is building a brick and concrete addition, 200x200 ft., to its plant.

The American Machine & Tool Co., Chicago, will move to Hastings, Mich., where it has secured the plant formerly occupied by the Press Co. The concern is engaged in the manufacture of munitions.

The Filer Fiber Co., Manistee, Mich., has increased its capital stock to $150,000 and will increase its plant and double its output.

The Benton Harbor Machine Co., Benton Harbor, Mich., is adding 50 per cent to its capacity by the erection of new buildings and the purchase of new equipment.

The Albert Pudrith Co., East Fort Street, Detroit, is planning for the immediate erection of a new foundry on Hart Avenue.

The Puritan Machine Co., Lafayette Boulevard, Detroit, will build a two-story addition to its plant, 20 x 82 ft. and 30 x 50 ft.

The W. J. Hartwig Co., Jefferson Avenue, Detroit, manufacturer of electric fire alarm boxes, etc., is taking bids for the construction of a three-story and basement plant, 70 x 100 ft., at Jefferson Avenue and Fifteenth Street.

The Hoskins Mfg. Co., Buchanan Street, Detroit, manufacturer of electrical measuring instruments, etc., is building a one-story foundry, 60 x 110 ft., at its Lawton Street plant.

## Milwaukee

MILWAUKEE, Aug. 19.

The trend of machine-tool demand continues to move westward, and Middle Western industries are now probably the largest factors in the market. There has been a noticeable slackening in new orders from the Eastern states, but the increasing amount of business from the Central states, where conversion of ordinary industry to war work is now reaching its height, is compensating for the decline, the orders developing furnishing even larger and more pressing requirements. Machine-tool builders are occupied to the maximum of capacity and no relief in catching up on deliveries is possible.

The labor situation shows improvement, due largely to the early operation of the Federal Employment Service program.

The Lawson Aircraft Corporation, Green Bay, Wis., which has been in process of reorganization, is making final arrangements for the establishment of its proposed new works and an option has been taken on the plant of the former Wisconsin Engine Co. at Corliss. The Lawson company has been manufacturing aircraft at Green Bay, Wis., for nearly two years, its product being confined entirely to experimental machines for the Government. The relocation is made desirable by the lack of room at Green Bay, and also to take advantage of the larger contribution of raw and finished materials in Milwaukee and vicinity. The actual removal probably will be effected within 60 or 90 days, and will involve an enlargement of the working force from 500 to 2500 or more men and women. The present works at Green Bay probably will be maintained to furnish parts. Three types of aircraft, primary training, advanced training and battle planes are being manufactured. The capital stock has been been increased from $200,000 to $500,000, and the new officers are: President, George W. Ellis, Green Bay; vice-president and chief engineer, Alfred W. Lawson, Green Bay; second vice-president, August H. Vogel, Milwaukee; treasurer, Fred J. Schroeder, Milwaukee; secretary, Willits Pollock; executive secretary, Milwaukee County Council of Defense; director, William Hoberg, Green Bay.

The American Power Shovel Co., Milwaukee, has been incorporated with a capital stock of $200,000, to manufacture excavating machinery, loading and unloading equipment and similar products. The incorporators are Walter Drew, 1501 First National Bank Building, Milwaukee; P. O. Fish and John T. Blake, Madison, Wis. The corporation has acquired patents on improved types of excavating units. A more definite announcement of plans will be made after the first meeting of the directors in about ten days.

The Holbrook-Armstrong Iron Co., Racine, Wis., has been reorganized under the style of the Armstrong Foundry Co., the Holbrook interests retiring. William H. Armstrong, for four years secretary and treasurer of the Mitchell Motors Co., Racine, has retired from that concern to become president and general manager of the Armstrong company. John Armstrong is secretary and treasurer.

The Reliance Motor Truck Co., Appleton, Wis., which has just completed its new shop, 175 x 300 ft., and is now installing equipment for motor truck and axle manufacture, has undertaken a Government contract to do machine work on 200,000 large-caliber shells, which will require the capacity of the plant for two months or more. In the meantime the company is proceeding with plans for beginning the manufacture of motor trucks and axles immediately upon the completion of the shell contract. To handle an order for 60,000 internal spur-gear drive rear axles of the company's own design, a new shop, 75 x 200 ft., will be erected. It is hoped to get work on the new building under way before the end of August. Ira L. Miller is president and general manager.

The Trico Fuse & Mfg. Co., 2416 North Avenue, Milwaukee, manufacturer of a newly patented fuse, and now devoting about 60 per cent of its capacity to Government contracts, has taken a three-year lease on the carpenter shop of the Pabst Brewing Co. and is equipping the building for fuse manufacture. The production will be increased about 100 per cent within 30 or 60 days. Oscar Jung is secretary and treasurer of the Trico company, which formerly was known as the Arrow Fuse & Mfg. Co.

The Ashley Sanitary Poultry Rack Co., Milwaukee, has been incorporated with a capital stock of $25,000 to manufacture hardware specialties. The incorporators are L. W. Ashley, Jesse E. Matteson and Daniel Stirn, Jr. For the present it is expected that the company will contract with local shops for the production of its goods, but later a plant will be built and equipped.

The Bayley Mfg. Co., 732 Greenbush Street, Milwaukee, manufacturer of blower and ventilating systems, has deferred the construction of a gray iron foundry, as it has been able to make satisfactory connections for its supply of castings with existing shops. It is intended, however, to undertake the work as soon as conditions make it more practicable. The proposed foundry will be 63 x 110 ft., of brick and reinforced concrete, and is estimated to cost about $25,000.

The Rhinelander Paper Co., Rhinelander, Wis., will erect a one-story addition, 50 x 72 ft., to its boiler house and will install several 200-hp. boilers. The work is in charge of L. A. DeGuere, consulting engineer, Grand Rapids, Wis.

The Avery Co., Peoria, Ill., manufacturer of tractors, has taken over the ownership and control of the Davis Mfg. Co., Milwaukee, and is abandoning the use of the Davis name in connection with the foundry and machine shop, at Fifty-seventh Avenue and Mitchell Street, West Allis. The Davis company has been manufacturing gas engines for the Avery company for several years and is now devoted exclusively to that purpose. Frank M. Davis, who was president of the Davis company will continue as general manager.

## Cincinnati

CINCINNATI, Aug. 19.

The Japanese Government is inquiring in this market for 100 24-in. lathes for prompt shipment. As far as can be ascertained the order has not been placed with any local or nearby manufacturer. It is also rather significant that makers of portable electric drilling machines have lately received a number of inquiries from Japanese exporters.

The labor situation is improving very slowly and few skilled mechanics have yet been received from plants that were making automobiles. Common labor is also very scarce. The recent extreme hot spell did not cut down production in local shops to any appreciable extent.

The smoke prevention campaign now being waged by the city authorities has created an interest in automatic stokers. The coming meeting of the National Association of Stationary Engineers, to be held here next month, will doubtless lend further interest to the subject.

The American Tool Works Co., Cincinnati, has been incorporated in Ohio with $800,000 capital stock. The incorporators are J. B. Doan, R. S. Alter, Henry Lucas, C. B. Wright, W. B. Hofer and L. E. Voorhies. The company formerly operated under a West Virginia charter. No additions to its plant on Eggleston Avenue are planned, but the company is constantly adding equipment in an endeavor to take care of war orders.

The Cincinnati Iron & Steel Co., Cincinnati, has applied

for a permit to build an addition to its plant, estimated to cost $40,000. James I. Stephenson is president.

The G. A. Schacht Motor Co., Cincinnati, will erect a one-story brick machine shop addition to its plant on Evans Street.

The George A. Fuller Co., Chicago and New York contractor, has commenced preliminary work on the nitrates plant to be erected in a Cincinnati suburb by the Air Nitrates Corporation, New York.

The Heeken Can Co., Cincinnati, has let contract to William Barr & Co. for a branch plant to be erected in Norwood.

The Peters Cartridge Co., Cincinnati, which recently acquired the former plant of the R. K. LeBlond Machine Tool Co. in Linwood, has decided to add three additional buildings: 35 x 180 ft., one story; 20 x 125 ft., one story, and 40 x 60 ft. four stories, all of brick and steel. The company has a Government contract for shells to be loaded at its powder plants at King's Mills, Ohio.

The Knowles Tool Mfg. Co., Dayton, Ohio, has been incorporated with $25,000 capital stock by H. H. Gersner, John F. Stickel and others. It will manufacture machinists' tools and dies. Manufacturing quarters have been secured in the Philip Haas Co.'s building on North Webster Street.

The Dairy Mfg. Co., Dayton, has been incorporated with $10,000 capital stock by J. H. Young and others and will manufacture special equipment. Offices have been opened in the Lindsey Building.

The Domestic Engineering Co., Dayton, has acquired an additional site adjoining its plant and will probably erect an extension at an early date.

On Aug. 11 the plant of the Oho Malleable Iron Co., Columbus, Ohio, suffered an estimated fire loss of $25,000. Rebuilding operations are under way.

The National Stove Co., Dayton, has increased its capital stock from $20,000 to $50,000 and will probably build an addition to its plant in Miamisburg, Ohio. The company is engaged entirely on essential work.

The Western Wheeled Scraper Co., Columbus, Ohio, has recently received a large Government contract and will add some equipment to its plant.

The Greenville Mfg. Co., Greenville, Ohio, recently organized, will build a plant for the manufacture of machinery and special equipment used in the sand and gravel business. Fred. D. Coppock is one of the principal incorporators.

## The Central South

LOUISVILLE, Aug. 19.

Business has improved materially the past month with local foundries, boiler and machine shops, and many orders are coming in for gray iron castings. Ice machinery has been active, pumps are in big demand, and the call for boilers has been so heavy that orders are being turned down. Local foundrymen are having much trouble in securing good grades of coal, as eastern Kentucky coal has been routed to the Lakes, and other districts.

Some big contracts are in sight in connection with construction at Stithton, Ky., of the new Government artillery cantonment. Inquiries have been placed for 20 150-hp. boilers, and it is understood that a pumping plant and a refrigeration system will be installed. The general contract was recently placed with the John Griffith & Son Co., Chicago, for a large section of the camp, which is estimated to cost close to $15,000,000.

The Buzz Engineering Co., 107 West Main Street, Louisville, recently incorporated with a capital of $50,000, has purchased a brick plant in South Louisville, at Second and Jones Streets, and expects to install machinery and make improvements for manufacturing conveying machinery, deep well double-action pumps, and operate a machine shop. Davis Brown is president and J. E. Ulrich, secretary and general manager.

C. S. Woods & Co., Security Building, Lexington, Ky., is in the market for a second-hand 25-hp. locomotive type boiler.

The Continental Car Co., Louisville, which is handling Government contracts for truck bodies, is in the market for second-hand machinery, including quick acting lathe, 80 in. from center to center, universal milling machine, 18 in. shaper and 30 x 30 in. planer.

A second-hand Curtis generator set, 500 kw., 2200 volts, is needed by the Middlesboro Lumber Co., Middlesboro, Ky.

The Anti-Skid Traction Co., Louisville, has been incorporated with a capital of $10,000 to manufacture anti-skid devices. Charles P. Smith is the principal incorporator.

## St. Louis

ST. LOUIS, Aug. 19.

The Ada Brick Co., Ada, Okla., E. D. Young and others interested will equip a plant requiring about $25,000 worth of machinery.

The Ittabena Compress Co., Ittabena, Miss., will improve its plant by the addition of about $16,000 worth of new machinery.

The Chickasaw Compress Co., Paul's Valley, Okla., will rebuild its plant recently burned with a loss of $150,000.

The Read Milling & Elevator Co., Tulsa, Okla., whose plant was recently burned with a loss of $130,000, will rebuild at once.

The Inland Machine Works, St. Louis, Ottmar G. Stark, manager, Broadway and Cass Avenue, will equip a $150,000 plant for the manufacture of dies, jigs, machine tools, etc.

Alex. Kilpatrick & Sons, St. Louis, will increase their foundry capacity and have let contracts for additions.

The Holly Springs Refrigerating Co., Holly Springs, Miss., Hamilton Johnson and others interested, will install about $20,000 worth of refrigerating equipment.

The Bristow Glass Works, Bristow, Okla., will increase its equipment and also install machinery for making munitions.

The Automoble Improvement Co., Enid, Okla., will equip a plant for the production of automobile accessories and devices. W. S. Marr is secretary and manager.

Pascagoula, Miss., Forest Johnson, mayor, will equip a sewage disposal plant at a cost of about $100,000 with accessory requirements.

McAlester, Okla., will install a sewage disposal plant to cost about $110,000. J. M. Gannaway is city clerk.

The Union Shipbuilding Corporation, Biloxi, Miss., L. T. Hance and others interested, will install equipment for the construction of six ships

Alexander Kilpatrick & Sons, Bulver Avenue, St. Louis have awarded a contract to the T. J. Ward Construction Co., Olive Street, for the erection of a one-story foundry, 60 x 150 ft.

The Talbot Reel & Mfg. Co., Eighth Street, Kansas City, Mo., is preparing plans for the construction of a new plant, 69 x 130 ft., to cost $70,000. It will be two-story and basement, and known as Factory No. 2.

The Doullut & Williams Shipbuilding Co., New Orleans, La., recently incorporated with a capital of $1,000,000, has completed plans for the construction of a plant with initial structures to cost about $300,000. The buildings will be one-story, 100 x 500 ft. and 40 x 60 ft. Steel vessels of about 10,000 tons will be built. W. H. Williams is general manager.

The Mississippi Wood Products Co., Charleston, Miss., recently incorporated with a capital of $500,000, will operate the new plant to be constructed by the Lamb-Fish Lumber Co. P. H. Starks and W. B. Burke head the company.

The Union Shipbuilding Corporation, Biloxi, Miss., will establish a ship building works on Back Bay, with capacity for the construction of six vessels at one time. It is understood that the plant will specialize in the production of wooden ships. L. T. Hance heads the company.

The Kelly-Thompson Shipbuilding Co., Mobile, Ala., will be known as the Kelly Dry Dock & Shipbuilding Co., with capital, as heretofore, of $150,000. The company is planning for the construction of a marine railroad at its plant. T. J. Kelly is president, L. A. Bedden, vice-president, and E. A. Kelly, secretary. Russell Thompson has retired from the company.

## Texas

AUSTIN, Aug. 17.

The Columbia Oil & Refining Co., Dallas, has been incorporated with a capital stock of $500,000. It plans to operate in the north central Texas oil fields and to build a refinery. W. F. Miller is a stockholder.

The Midland Bridge Co., Houston, which recently launched its second wooden ship, has been given a Government contract to construct 12 more vessels. Two are to be of the Ferris type of 3,500 tons, and the others schooner barges of 2500 tons each. This makes a total of 18 ships that the company has under contract.

George B. Eggleston, San Antonio, and H. H. Todd, of Gainesville, have purchased a site at San Antonio upon which they will build an oil refinery to cost about $250,000.

The Humble Oil & Refining Co., Houston, will equip its oil well pumping plants in the Goose Creek field with elec-

tric motors, with a central station to supply the current. More than 100 motors will be required. The company is having plans drawn for an oil refinery which it will build at Houston to cost about $2,000,000. The original unit will be constructed so that additions can be made from time to time.

The Fort Worth Well Machinery Co., Fort Worth, will build a large machine shop, warehouse and office building. H. G. Parr is secretary and treasurer.

The Empire Gas & Fuel Co., Houston, has plans under consideration for the construction of an oil refinery on the ship channel.

## California

SAN FRANCISCO, Aug. 13.

Work is progressing on the $25,000,000 Liberty shipyards at Alameda. It is planned to lay the first keel by November, but the yards are not expected to be in full running order before June, 1919.

The matter of delivery on priority orders is causing a good deal of discussion and some friction in this territory. It is reported that some representatives of Eastern plants have been promising deliveries at a date which they know cannot be obtained. This is done to secure orders in preference to the dealers, who are acting in all respects in strict accordance with the priority rules. When the time for delivery comes excuses are offered and it is pointed out that by allowing the order to stand the purchaser can get quicker delivery than by giving a new order on a new priority certificate to some other firm. There has also been some misrepresentation as to the reasons for giving some of those orders precedence. This has held up some legitimately urgent business. These matters have now been adjusted and machinery which is entitled to any of the first three of the classifications is coming through faster than previously.

J. H. Hansen, president Skandia-Pacific Oil Engine Co., San Francisco, has returned from the East and reports that he closed a contract with the Emergency Fleet Corporation for 20 Diesel type engines to cost $2,500,000. Each engine is to develop in excess of 1100 hp. The Skandia-Pacific Oil Engine Co. will complete the improvements it has been making in about 30 days, which will double the capacity of the plant.

The Moore Shipyard Co., Oakland, opened its new boiler plant Aug. 15, which covers an area of 40,000 sq. ft. The machinery cost approximately $150,000 and about 1000 men will be employed. Other work to increase the facility of handling Government contracts is being rushed.

The L. C. Diebert Co., San Francisco, has completed the erection of a brick building, 65 x 80 ft., on Mina Street, where it is installing the machinery moved from its former location.

The foundry of Wildman & Mahony, Sutter Creek, Cal., is being dismantled and the machinery and material sold for junk.

The Morris Tire Machinery Co., Los Angeles, has been incorporated with a capital of $57,600 by E. H. Furman, E. Wengler and M. Laughlin.

## The Pacific Northwest

SEATTLE, Aug. 13.

The establishment of new industries and the needed enlargement of existing ones has been somewhat slowed down by the low stock of equipment on hand, and the long delays in securing materials, combined with an extreme labor shortage. Machinery that will save labor in even a small degree is greatly in demand. A number of plants are being electrified, and this work would be far heavier if large motors and transformers could be secured promptly.

Local machinery houses predict that it will be practically impossible in the future to secure repair parts on short notice, and wherever possible dealers are stocking up to capacity.

The Pacific Marine Iron Works, Portland, has leased a large site near the Morrison Street bridge, which will be equipped for a fitting out dock for vessels now under construction. Three slips, each 112 x 312 ft., will be built.

The Choiberg Ship Co., Victoria, B. C., will shortly begin work of laying out its proposed new shipyard. Three ways will be laid and the construction of three 1500-ton sailing vessels undertaken.

The G. M. Standifer Construction Co., Vancouver, Wash., has completed construction of its new shippard and work has been started on the first keel. The plant is equipped with five sets of ways. The company holds contracts for 19 9500-ton vessels.

Fire recently damaged the plan and property of the Simpson Logging Co., Shelton, Wash., to the extent of $200,000.

The Foundation Co., Victoria, B. C., will undertake a program of shipbuilding which includes 20 auxiliary steam-driven schooners. The construction of 10 ships will be started immediately.

The Gilbert Hunt Foundry, Walla Walla, Wash., has been reopened by A. L. Galdwin and Charles Hoffman. It has been completely overhauled.

The Grays Harbor Iron & Machinery Works, Hoquiam, Wash., has been incorporated for $40,000 by M. T. Thorpe, C. I. Bel, P. H. Honan and others. The company has plans under way for a machine shop and foundry.

The West Seattle Boat & Engine Co., Seattle, has been incorporated for $30,000 by H. H. Guth and H. A Bernardo. Its plans are not perfected.

The Kiernan & Kern Shipyard, Portland, has received a Government contract for four wooden steamers, each to have capacity of 4500 tons and costing $2,600,000. The plant will be increased from two to four ways.

The Kilbourne-Clarke Mfg. Co., Seattle, manufacturer of wireless equipment, plans the immediate construction of a plant on East Marginal Way to cost $80,000. It will consist of four buildings, including a one-story machine shop, 100 x 300 ft. two-story storehouse, 60 x 100 ft.; one-story laboratory, 50 x 100 ft., and two-story office building 60 x 60 ft.

The Grays Harbor Lumber Co., Hoquiam, Wash., is making improvements to its plant. A concrete addition to the power house, two stories, 34 x 44 ft., will be built. New machinery is to be installed, including a 750-kw. and 1000-kw. turbines and two high pressure boilers. The sawmill is being completely electrified.

The Associated Engineering Co., Portland, Ore., has recently been formed and has taken over the property of the Speciality Box Mfg. Co. A blacksmith shop and department for manufacturing ship spars will be added.

A total of $50,000 has been subscribed by business men of Everett, Wash., to establish the Hyde Wooden Shipyards near that city.

The Northwest Steel Co., Portland, plans to begin the outfitting of ships which it will construct about Oct. 1. A five-acre site has been secured on which will be erected machine shops, warehouse and fitting out dock.

## Canada

TORONTO, Aug. 19.

The Dominion Shipbuilding Co., foot of Bathurst Street, Toronto, will commence immediately on the erection of a machine shop to cost $75,000.

The Maple Leaf Shipping Co., Ltd., Toronto, has been incorporated with a capital stock of $5,000 by Arthur C. McMaster, Toronto, Alice McIntosh, Hazel C. Perkins and others of Ottawa, to build boats.

The Eastern Pulp Co. of Canada, Ltd., Montreal, has been incorporated with a capital stock of $500,000 by Gerald A. Coughlin, Francis G. Bush, George R. Drennan and others, to manufacture pulp, paper, cardboard, wood products, etc.

The Parry Sound Iron Co., Ltd., Owen Sound, Ont. has been incorporated with a capital stock of $2,000,000 by Lottie G. Day, Annie M. James, Elizabeth M. Harrison and others to manufacture metals, lumber products, ships, etc.

Frank Hillock, Ltd., Toronto, has been incorporated with a capital stock of $100,000 by William H., Frank S. and John F. Hillock and others, all of Toronto, to manufacture lumber, wood products, etc.

Andrich & Hyndman, Ltd., Palmerston, Ont., has been incorporated with a capital stock of $50,000 by Alfred Bicknell, Bert H. L. Symmes, John S. Duggan and others, all of Toronto, to manufacture leather goods, trunks, etc.

Slazengers, Ltd., has been granted permission to do business in Ontario as manufacturer of implements, tools, machinery, etc., with a capital stock of $40,000. Ernest A. Purkis, 409 Indian Road, Toronto, is attorney.

Fire which broke out in the forging room of the Canadian Warren Axe & Tool Co., St. Catharines, Ont., Aug. 12, damaged the building and machinery to the amount of $25,000. The company proposes to commence immediately on the reconstruction of the plant.

The Aviation Department, Imperial Munition Board, has taken over the building formerly occupied by the Stone Lithographing Co., King and Spadina avenues, Toronto, which has been fitted out to take care of the repair work in all the aviation camps in the district. Machinery is be-

ing installed and when ready to begin work the plant will represent an investment of $60,000.

J. T. Burns, Railroad No. 2, King, Ont., is in the market for a horizontal return tubular boiler capable of carrying 90 lb. steam pressure or over, 54 in. dia., 12-ft. tubes.

Mr. Smith, D'Entremont & Co., 1475 Queen Street West, Toronto, Ont., is in the market for rodless hydraulic press, 6 or 10 in. plunger, about 12-in. platens.

J. Lochrie, 1405 Bloor Street West, Toronto, manufacturer of shrapnel bullets, etc., is in the market for a Landis die that will cut 2-in. dia., separate or in a complete machine.

The premises of the Metal Shingle & Siding Co., Ltd., Deforimer and St. Catharine streets, Montreal, were damaged by fire Aug. 15 to the amount of $75,000. The company will rebuild.

Plans have been prepared for an addition to the machine shop of the Vulcan Iron Works, Industrial Island, Vancouver, B. C., to cost $5,000.

The Lancashire Dynamo & Motor Co., 107 Duke Street, Toronto, will build a two-story brick addition to its machine shop at a cost of $4,000.

The Canadian Allis-Chalmers Co., Lansdowne Avenue, Toronto, will build an addition to its grey iron foundry to cost $20,000.

The Eastern Machinery Co., Quebec, will build a factory to cost $60,000. Amable Laprise is interested in the company.

Chippewa, Ont., proposes to install an electric light plant at a cost of $6,500.

Ernest Skaling, Kempt, N. S., has started work on the erection of a shingle mill and will be in the market for machinery, etc.

The Wallace Shipbuilding Co., Ltd., North Vancouver, B. C., will build an addition to its shipyards to cost about $100,000. R. Wallace is manager.

The John Randuff Buil Co., Christiania, Norway, with representatives at Vancouver Hotel, Vancouver, B. C., have secured a site at Vancouver and will build a factory at a cost of $40,000.

The Cholberg Ship Co., Victoria, B. C., is having plans prepared for the erection of a shipbuilding plant to cost about $150,000.

## NEW TRADE PUBLICATIONS

**Pyrometers.**—Leeds & Northrup Co., Philadelphia. Catalog No. 87. Size, 8 x 10½ in.; pages, 60. Describes a system of pyrometry and temperature control in which the potentiometer method is employed to measure the electromotive force of the thermocouples. In this arrangement a known electromotive force which is capable of variation to balance the electromotive force of the thermocouple is used and the galvanometer simply indicates when the two forces are balanced and there is no current flowing. The various forms of pyrometer employing this principle are illustrated, and mention is made of a special apparatus for locating the recalescence and the decalescence points of metals.

**Induction Furnace.**—Pyrolectric Instrument Co., 636 East State Street, Trenton, N. J. Circular No. 11. Presents illustrations and descriptive matter regarding a high frequency induction furnace for use in laboratories and scientific research work. The special feature of the furnace is the employment of oscillatory currents for the generation of heat and the production of temperature. Among the work for which the furnace is adapted is the heat-treatment of metals, the making of special alloys, the melting of glass and non-conducting metals and for producing high temperatures. Views of the various crucibles used and some of the materials that have been melted in the furnace are included.

**Coal Cutting Machines.**—Sullivan Machinery Co., 122 South Michigan Avenue, Chicago. Bulletin No. 73. Covers a line of electric motor or compressed air driven coal-cutting machines for room and pillar or longwall mining. The design and construction of the machine is gone into at some length, the text being supplemented by numerous illustrations of the machines in use. Views of the different parts are presented, and condensed tables or specifications are included.

**Wire and Steel Products.**—Cambria Steel Co., Widener Building, Philadelphia. Two booklets. The first contains a list arranged alphabetically of the various products of this company, ranging from a fine wire nail weighing 0.005 lb. to a 200-ton steel casting. Numerous subheads are given where necessary to describe the different lines. The other booklet illustrates and describes an extensive line of wire and nail products. An illustration showing the exact size of steel wire from No. 1 to No. 20 gage is presented, and a number of tables of useful information are included.

**Motor Starters.**—Cutler-Hammer Mfg. Co., Milwaukee. Circular No. 259. Contains illustrations of four typical installations of a totally inclosed starting-switch for squirrel cage motors. The construction and arrangement of the starting and running contacts, fuses, etc., and the way in which the motor is connected to the line ahead of the fuses and then automatically engages the fuses without opening the motor circuit in the transition are shown. Provision is made to lock the switch open or closed, and an interlocking arrangement is provided whereby it is impossible to inspect or remove fuses with the switch in a closed position.

**Welding and Cutting Apparatus.** — Bastian-Blessing Co., West Austin Avenue and La Salle Street, Chicago. Catalog. Lists an extensive line of oxy-acetylene welding and cutting apparatus in which the flashback is claimed to have been eliminated. A page is given to each type of apparatus with an illustration and list of the various parts. Descriptions, more or less detailed, are presented of the torches employed for cutting and welding and the diaphragm gas regulator employed. The different arrangements of regulators that can be supplied are illustrated, and mention is made of equipment for lead burning.

**Cutters and Special Tools.**—Cleveland Milling Machine Co., Cleveland. Catalog A. Size, 6 x 9 in.; pages, 224. Calls attention to a wide and varied line of milling, gear and formed cutters, hobs of every description, counterbores and special tools and reamers. For the most part a separate page is given to each tool with an illustration, brief description, and where necessary, tables of the various sizes that can be supplied. Illustrations showing the relative sizes of gear teeth and screw threads are presented, and a number of tables of useful information and a complete index are included.

**Rustproofing.**—American Chemical Paint Co., 318 Liberty Building, Philadelphia. Pamphlet. Pertains to the Deoxidine process of rustproofing which is designed to prepare steel for painting so that it will not rust under the paint. Directions for rustproofing and cleaning steel and iron by this process, which uses a liquid possessing the properties of removing oil, etching metals and dissolving metallic salts are presented, and the results of a number of tests are included.

**Door Hangers.**—F. E. Myers & Bro., Ashland, Ohio. Catalog No. DH18. Refers to a line of door hangers and tracks for factories, warehouses, garages, etc. All types from the flat track hanger to the covered weatherproof adjustable hanger are illustrated and briefly described. Instructions for mounting the hangers are presented, together with a number of views of them in use.

**Pyrometers.**—Wilson-Maeulen Company, 781 East 142nd Street, New York City. Catalog. Illustrates and describes a wide line of electric pyrometers in which only one pivot is used. The various types are each given a separate page with an illustration and brief description, and diagrams showing the way in which the pyrometers are installed and reproductions of the charts used are included.

**Lifting Magnets.**—Ohio Electric & Controller Co., 5960 Maurice Avenue, Cleveland. Bulletin 101. Gives general description and specifications for a mill type lifting magnet for handling iron and steel products. Among the various claims for the magnet are a minimum number of parts, no exposed bolts or nuts, a small amount of headroom and maximum heat radiation. Data on the current required and the arrangements provided for the control of the magnet are included.

**Street Lighting Transformers.**—General Electric Co., Schenectady, N. Y. Bulletin Y-1142. Devoted to a line of series transformers for street lighting service. A description of the transformer which can be supplied for either subway or aerial mounting is presented with illustrations of both types and diagrams showing the various methods of mounting that can be employed are included.

**Flexible Couplings.**—Francke Co., New Brunswick, N. J.; Smith-Serrell Co., Inc., 90 West Street, New York, general sales agent. Bulletin No. 26. Relates to the use of a flexible coupling of the heavy duty type for connecting two shafts. The coupling employs a series of flexible pins instead of bolts, each pin consisting of a bundle of flat steel springs which are capable of a slight longitudinal movement as well as a bending one to take care of small variations in the alignment of the two shafts. A number of illustrations of the couplings are presented together with a condensed table of specifications and directions for installing the coupling.